MP MASTER
MA30944

SYSTEM OVERVIEW

Description: -48VDC or +24VDC @ up to 1200 amperes power system.

The Vortex® product line is a complete integrated power system containing power conversion, intelligent monitoring, and distribution. The Vortex® Power System (VPS) typically consists of ...

- **VPS Distribution Cabinet Assembly**

  The system always contains a VPS Distribution Cabinet Assembly which provides DC distribution through fuses and/or circuit breakers.

- **VPS Intelligence Shelf**

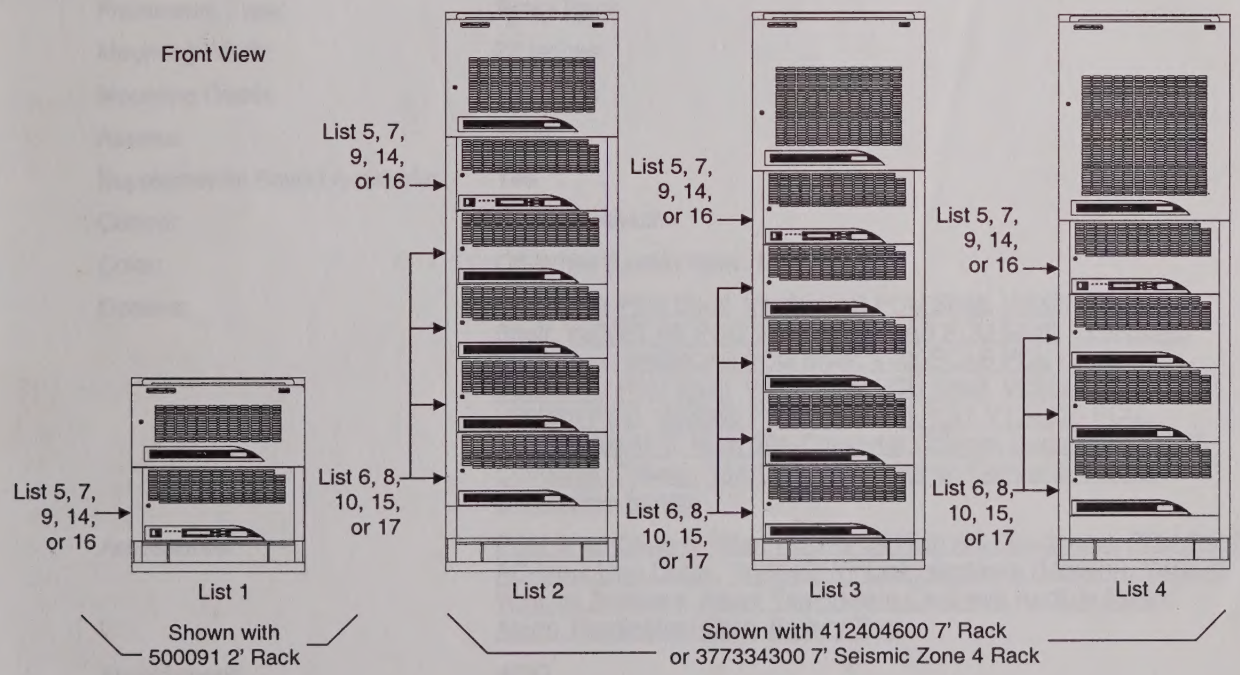
  The system always contains one front access VPS Intelligence Shelf, which houses Power Conversion Units (PCU's) and the Meter-Control-Alarm (MCA) assembly. The MCA controls the operation of up to twenty or fifty-six PCU's (depending on VPS Intelligence Shelf installed) and provides system metering, control, and alarm functions.

- **VPS Expansion Shelves**

  The system may contain one or more optional front access VPS Expansion Shelves, each of which houses PCU's.

- **Power Conversion Units (PCU's)**

  Provide load power, battery float current, and battery recharge current during normal operating conditions.


Front View
List 5, 7, 9, 14, or 16
List 6, 8, 10, 15, or 17
List 1
List 2
List 3
List 4
Shown with 500091 2' Rack
Shown with 412404600 7' Rack or 377334300 7' Seismic Zone 4 Rack

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VPS Distribution Cabinet Assembly: The VPS Distribution Cabinet Assembly is part of the system package and there is no separate part number needed for ordering. The distribution cabinet is factory mounted in the relay rack specified when ordered. Four different sizes of the VPS Distribution Cabinet may be ordered to accept from one (1) to four (4) distribution bus panel assemblies. There are a variety of these distribution bus panels that provide combinations of load distribution, low voltage disconnect, battery disconnect, and dual voltage load distribution.

Most of the distribution panels provide the VPS modular distribution fuseholder/circuit breaker mounting blocks. These blocks accept either a TPA-type fuseholder or an LEL1-type circuit breaker. The fuseholder or circuit breaker snaps into the modular mounting block. TPL-type fuses and GJ-type circuit breakers are also available up to 600 amp rating.

Family:	Vortex®
Spec. No.:	582120000
Model:	1231V2
Output Voltage:	-48 Volts or +24 Volts DC
Output Capacity:	
System:	1200 Amperes, maximum, per bay
Distribution Bus Panel:	500 Amperes, maximum, per panel
PCU:	25A/-48V, 50A/-48V, 65A/-48V, 100A/+24V, and 130A/+24V PCU's are available
Agency Approval:	Listed UL Subject 1801, CE Mark
Framework Type:	Relay Rack
Mounting Width:	23 Inches
Mounting Depth:	18 Inches
Access:	Front
Supplemental Bay(s) Available:	Yes
Control:	Microprocessor
Color:	Off-White (Lorain Spec. M500-117)
Options:	V100ICAB PCU Shelf, V100ECAB PCU Shelf, V200ICAB PCU Shelf, V200ECAB PCU Shelf, V260ICAB PCU Shelf, V260ECAB PCU Shelf, V400ICAB PCU Shelf, V400ECAB PCU Shelf, V520ICAB PCU Shelf, V520ECAB PCU Shelf, V25B50 PCU, V50B50 PCU, V65B50 PCU, V100B25 PCU, V130B25 PCU, Vortex® SMART, Main 30A Converter Cabinet, Supplemental 30A Converter Cabinet, 15A Converter Cabinet, Converter Module, Distribution Panels
Accessories:	PCU Shelf Class B Filter, PCU Shelf High AC Disconnect, PCU Shelf AC Input Line Cords, Vortex® WinLink Hardware (Modem), Vortex® WinLink Software, Alarm Termination Card with Audible Alarm, Alarm Termination Card, Battery Tray
Environment:	40°C

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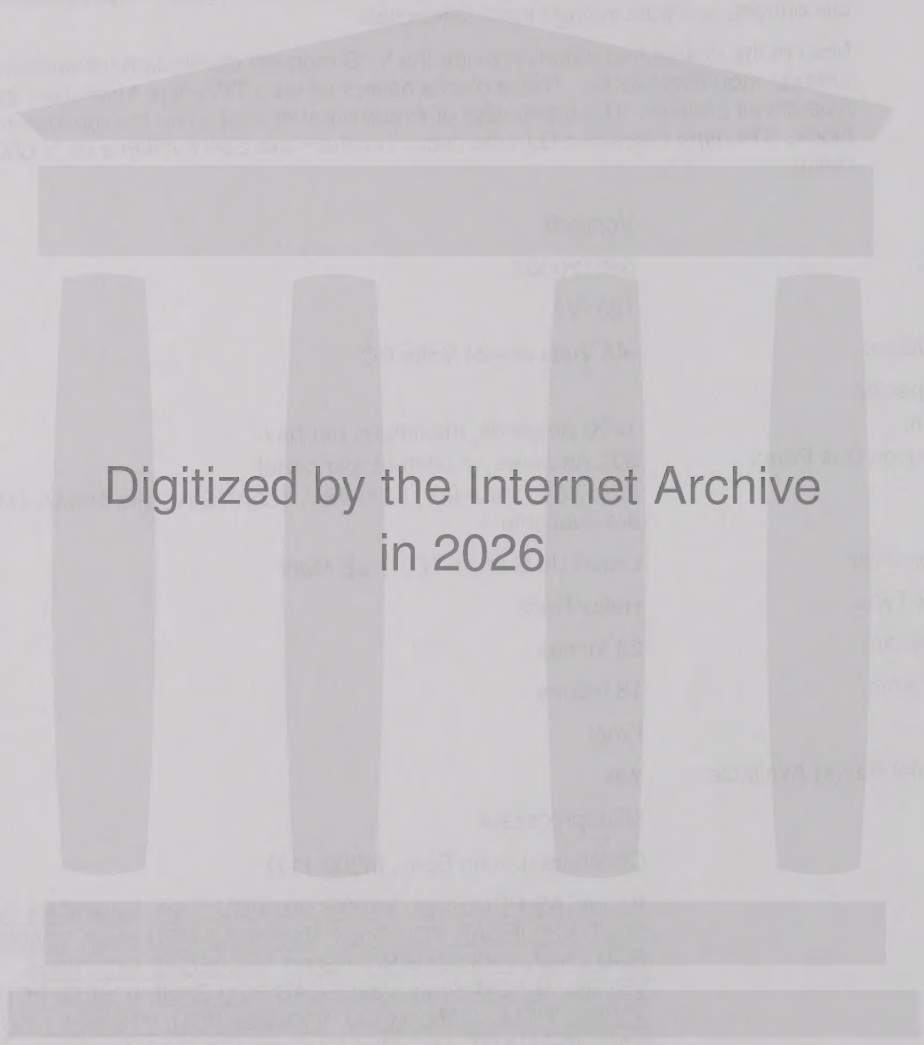
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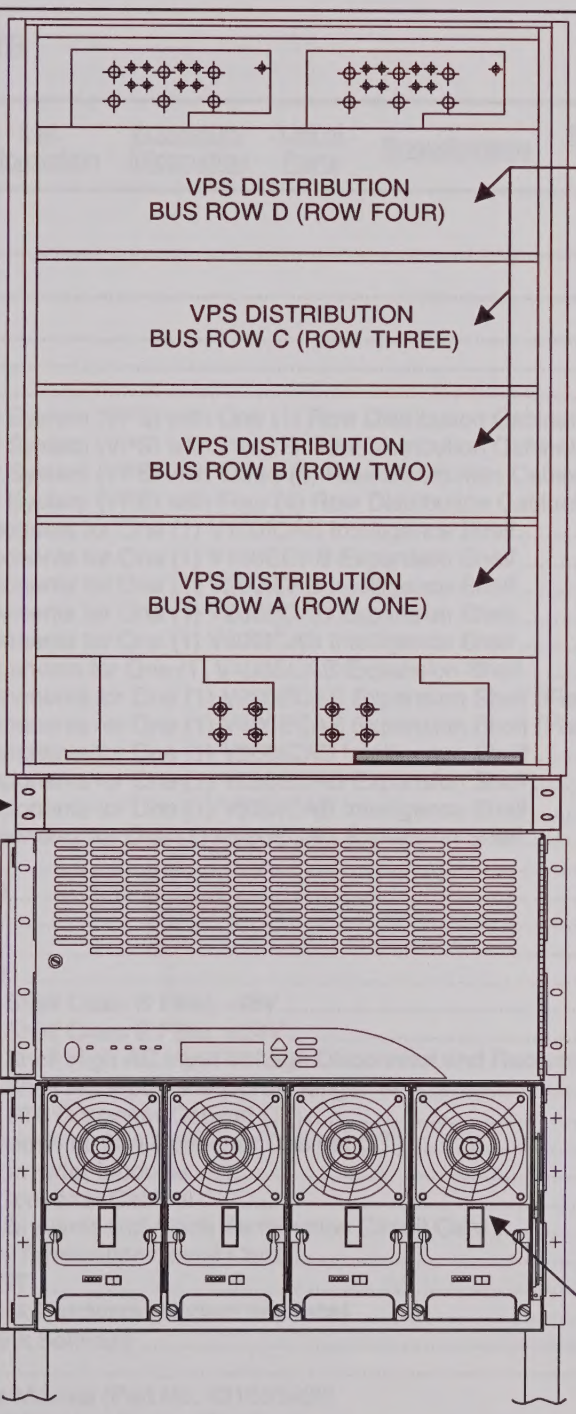

VPS Distribution Module List A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, AA, BB, CC, DD, JJ

List V: -48V Battery Disconnect

List W: +24V Battery Disconnect

VPS with 4 Rows of Distribution List 4

VPS with 3 Rows of Distribution List 3

VPS with 2 Rows of Distribution List 2

VPS with 1 Row of Distribution List 1

List 70: Vortex® SMART

VPS Intelligence Shelf List 5, 7, 9, 14, 16

VPS Expansion Shelf List 6, 8, 10, 12, 13, 15, 17

PCU List 18, 19, 20, 21, 25

OTHER OPTIONS

List 24: Class B Filter (-48V PCU Shelves)
List 26: Class B Filter (+24V PCU Shelves)
List 27: High AC Disconnect
List 32: AC Input Line Cords
List 28: Optional 30A Converter Cabinet (1st)
List 29: Optional 30A Converter Cabinet (2nd)
List 30: Optional 3A Converter Modules
List 31: Optional 15A Converter Cabinet
List 40: Alarm Termination Card w/ Audible Alarm
List 41: Alarm Termination Card
List 72: Vortex® WinLink Modem
List 73: Vortex® WinLink Software
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SEE ALSO

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Lugs
Relay Rack Options
Replacement Cables
List of Parts
Specifications
Dimensional Drawings
Related Documentation

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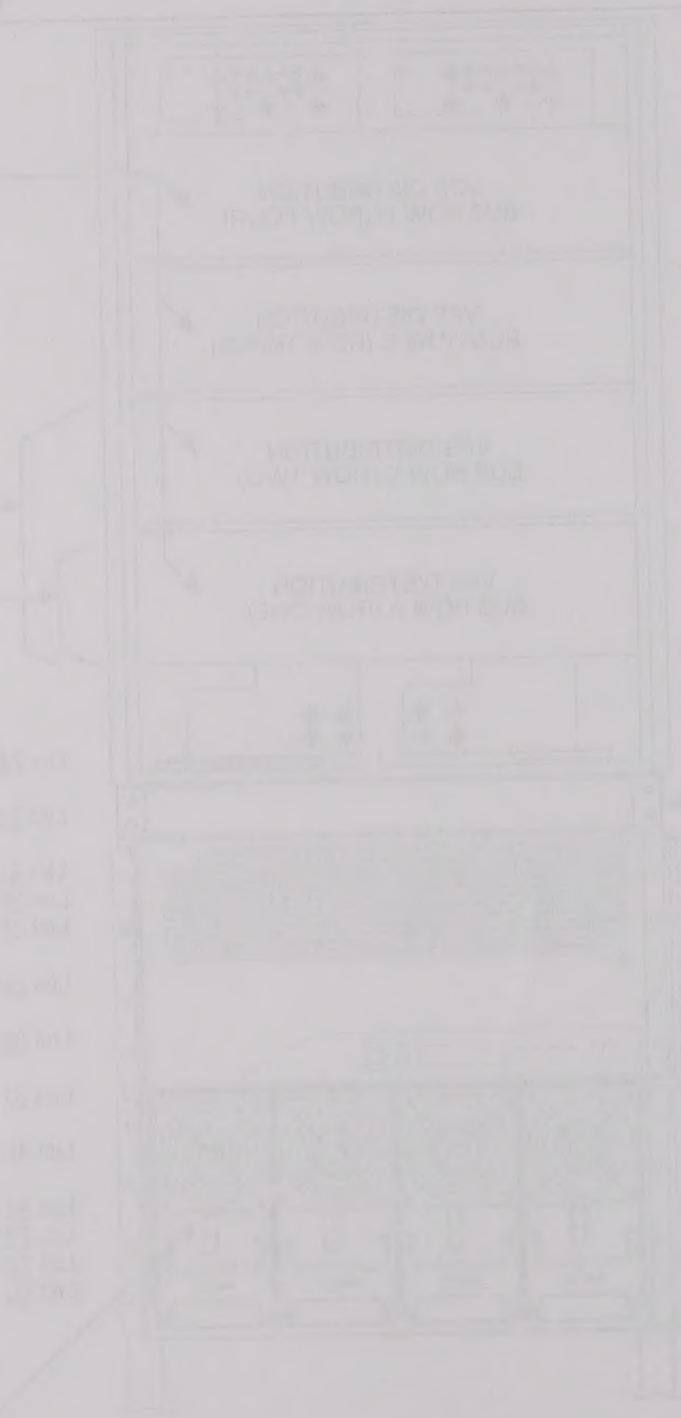

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LIST INFORMATION

List Structure

More detailed information is available for each option by clicking on the desired number in the column entitled *List #* from the table below.

List #	Marconi Part Number	Description	Mounting Positions (1U = 1-3/4")	Notes
1	58212000001	VPS (Vortex® Power System) with 1 Row Distribution Cabinet (Common equipment)	7U	1, 2
2	58212000002	VPS (Vortex® Power System) with 2 Row Distribution Cabinet (Common equipment)	11U	1, 2
3	58212000003	VPS (Vortex® Power System) with 3 Row Distribution Cabinet (Common equipment)	15U	1, 2
4	58212000004	VPS (Vortex® Power System) with 4 Row Distribution Cabinet (Common equipment)	19U	1, 2
5	58212000005	Interface Components for One (1) V100ICAB Intelligence Shelf (-48V)	4U	3
6	58212000006	Interface Components for One (1) V100ECAB Expansion Shelf (-48V)	4U	3
7	58212000007	Interface Components for One (1) V200ICAB Intelligence Shelf (-48V)	6U	3
8	58212000008	Interface Components for One (1) V200ECAB Expansion Shelf (-48V)	6U	3
9	58212000009	Interface Components for One (1) V400ICAB Intelligence Shelf (+24V)	6U	3
10	58212000010	Interface Components for One (1) V400ECAB Expansion Shelf (+24V)	6U	3
12	58212000012	Interface Components for One (1) V200ECAB Expansion Shelf (-48V) (Field Retrofit)	6U	3
13	58212000013	Interface Components for One (1) V400ECAB Expansion Shelf (+24V) (Field Retrofit)	6U	3
14	58212000014	Interface Components for One (1) V260ICAB Intelligence Shelf (-48V)	6U	3
15	58212000015	Interface Components for One (1) V260ECAB Expansion Shelf (-48V)	6U	3
16	58212000016	Interface Components for One (1) V520ICAB Intelligence Shelf (+24V)	6U	3
17	58212000017	Interface Components for One (1) V520ECAB Expansion Shelf (+24V)	6U	3

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List #	Marconi Part Number	Description	Mounting Positions (1U = 1-3/4")	Notes
18	58212000018	V65B50 PCU (-48V for use in List 14 & 15)	--	--
19	58212000019	V130B25 PCU (+24V for use in List 16 & 17)	--	--
20	58212000020	V25B50 PCU (-48V for use in List 5 & 6)	--	--
21	58212000021	V50B50 PCU (-48V for use in List 7, 8, & 12)	--	--
25	58212000025	V100B25 PCU (+24V for use in List 9, 10, & 13)	--	--
24	58212000024	-48V PCU Shelf Class B Filter (cannot be used in V100ICAB and V100ECAB Shelves)	--	--
26	58212000026	+24V PCU Shelf Class B Filter (cannot be used in V100ICAB and V100ECAB Shelves)	--	--
27	58212000027	PCU Shelf High AC Disconnect (cannot be used in V100ICAB and V100ECAB Shelves)	--	--
32	58212250032	PCU Shelf AC Input Line Cords (Individual PCU Feeds) for V200ICAB/V200ECAB and V400ICAB/V400ECAB Shelves	--	--
28	58212000028	MZHSA30CAB +24V to –48V 30A DC-DC Converter Cabinet (Main)	4U	--
29	58212000029	Additional MZHSA30CAB Converter Cabinet (Supplemental)	4U	--
30	58212000030	MZHSA3B +24V to –48V 3A Converter Module	--	--
31	58212000031	MZHSA15CAB +24V to –48V 15A DC-DC Converter Cabinet	4U	--
40	58212000040	Alarm Termination Card with Audible Alarm	--	4
41	58212000041	Alarm Termination Card	--	4
70	58212000070	Vortex® SMART	1U	--
72	58212000072	Vortex® WinLink Hardware (Modem)	--	--
73	58212000073	Vortex® WinLink Software	--	--
90	58212000090	Battery Tray	5U	--

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Notes:

1) A 582120000 power system must consist of a minimum configuration of a List 1, 2, 3, or 4.

2) One relay rack must be ordered separately for **each** bay (List 1, 2, 3 and 4), see Table 11 (Relay Rack Options) for available relay racks. Distribution panels, PCU, and PCU Shelf(s) list options must be specified when ordering. PCU Shelves must be ordered separately.

3) Includes PCU Shelf to Distribution Cabinet interconnect components only. PCU shelves are not included in Lists 5 through 10 and 12 through 17. Order each shelf separately per PD588700701/PD588700801, PD588701101/PD588701201, PD588701300/PD588701400, PD588703600/PD588703700, and PD588703800/PD588703900.

4) Use alarm cable part no. 421629500 (15' 0" cable) when list 40 or 41 is not ordered. (Lists 1, 2, 3, and 4 are equipped with this cable.) Other lengths part no. 421631600 (30') and part no. 421630900 (60') are available.

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VPS Distribution Bus Arrangements

If Low Voltage Disconnect (LVD) is required, each distribution row that is to operate from an LVD must have an LVD equipped in the specific panel ordered for that row.

Row 1 refers to the bottom row of the distribution cabinet.

List #	Marconi Part Number	Description	System Voltage	LVD
A	5821200000A	Distribution -- (24) System Positions	+24V or -48V	No
B	5821200000B	Distribution -- (20) –48V System Positions	-48V	Yes
C	5821200000C	Distribution -- (20) +24V System Positions	+24V	Yes
D	5821200000D	Distribution -- (16) System Positions, (4) Battery Disconnect Positions (1st row only)	+24V or -48V	No
E	5821200000E	Distribution -- (12) System Positions, (1) TPL Fuse Battery Disconnect Position (1st row only)	+24V or -48V	No
F	5821200000F	Distribution -- (12) –48V System Positions, (4) Battery Disconnect Positions (1st row only)	-48V	Yes
G	5821200000G	Distribution -- (12) +24V System Positions, (4) Battery Disconnect Positions (1st row only)	+24V	Yes
H	5821200000H	Distribution -- (8) –48V System Positions, (1) TPL Fuse Battery Disconnect Position (1st row only)	-48V	Yes
J	5821200000J	Distribution -- (8) +24V System Positions, (1) TPL Fuse Battery Disconnect Position (1st row only)	+24V	Yes
K	5821200000K	Distribution -- (16) +24V System Positions, (4) -48V Subsystem Positions (row position restrictions apply)	Dual	No
L	5821200000L	Distribution -- (12) +24V System Positions, (8) -48V Subsystem Positions (row position restrictions apply)	Dual	No
M	5821200000M	Distribution -- (8) +24V System Positions, (12) -48V Subsystem Positions (row position restrictions apply)	Dual	No
N	5821200000N	Distribution -- (4) +24V System Positions, (16) -48V Subsystem Positions (row position restrictions apply)	Dual	No
P	5821200000P	Distribution -- (12) +24V System Positions, (4) -48V Subsystem Positions (row position restrictions apply)	Dual	Yes
R	5821200000R	Distribution -- (8) +24V System Positions, (8) -48V Subsystem Positions (row position restrictions apply)	Dual	Yes
S	5821200000S	Distribution -- (4) +24V System Positions, (12) -48V Subsystem Positions (row position restrictions apply)	Dual	Yes
T	5821200000T	Distribution -- (2) TPL Fuse Battery Disconnect Positions (1st row only)	+24V or -48V	No
V	582120000V	-48V 1200A Low Voltage Battery Disconnect Contactor and Control Circuit (1st row only)	-48V	Yes

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W	582120000W	+24V 1200A Low Voltage Battery Disconnect Contactor and Control Circuit (1st row only)	+24V	Yes
AA	582120000AA	Distribution -- (3) –48V GJ Circuit Breaker System Positions (rows 1, 2, 3 only)	-48V	Yes
BB	582120000BB	Distribution -- (3) +24V GJ Circuit Breaker System Positions (rows 1, 2, 3 only)	+24V	Yes
CC	582120000CC	Distribution -- (3) GJ Circuit Breaker System Positions (rows 1, 2, 3 only)	+24V or -48V	No
DD	582120000DD	Distribution -- (3) GJ Circuit Breaker Battery Disconnect Positions (row 1 only)	+24V or -48V	No
JJ	582120000JJ	Distribution -- (16) System Positions, (4) Battery Disconnect Positions (2nd row only)	+24V or –48V	No

Notes:

1) Circuit breakers, fuses and lugs should be specified for each distribution panel. Unless otherwise specified, circuit breakers are pluggable LEL1 style and fuses are TPA style with pluggable fuse block.
2) Distribution panels are listed above with voltage restrictions. Denotation of 'Dual' indicates panel will supply power at both voltages, on one panel. See detailed information on each distribution panel in following section for specific panel restrictions.
3) For distribution panels with LVD, a maximum of 3 independently controlled LVD's are allowed per system. Additional LVD's may be added as dependent panels and 'slave' off of a controlled LVD. If so, the slave LVD panel must be mounted in the bottom row and its control LVD in the row above. A maximum of 6 LVD's (3 independent and 3 slave) may be used in each system.
4) Distribution panels are limited to 500A with a maximum cabinet capacity of 1200A.

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List Descriptions

List 1: Vortex® Power System (VPS) with One (1) Row Distribution Cabinet

List of Parts

Features

- Provides common equipment for one "power and distribution" bay rated for up to 500 amperes of distribution.
- Designed for one distribution bus panel.
- One (1) Shunt POD circuit card (433800164) is provided with each single voltage distribution bus. An additional Shunt POD is provided with a dual voltage bus. The Shunt POD interfaces with the VPS's MCA for system and/or subsystem distribution load current monitoring.
- A Low Voltage Disconnect (LVD) circuit card (486384500) is provided with each distribution bus (up to three per system) containing a low voltage disconnect contactor. The LVD circuit ...

  protects the battery from excessive discharge. Automatically disconnects the battery and system output from the controlled loads if battery voltage decreases below a preset adjustable value. This can occur during a prolonged commercial AC power failure, when the battery is required to furnish power to the load, and subsequently starts to discharge.

  The MCA has the capability of separately controlling up to three redundant low voltage disconnect circuit cards. Each circuit card consists of two individual battery monitoring circuits both of which must sense low system voltage before disconnection occurs. Low voltage disconnect contactors are factory wired to be controlled by a designated low voltage disconnect circuit card. A VPS Distribution Cabinet Assembly can be factory provided with up to three low voltage disconnect circuit cards (as long as the total quantity of low voltage disconnect circuit cards per system does not exceed three). Any of the four distribution bus panels can be factory equipped with a low voltage disconnect contactor. For a three row or under distribution cabinet assembly, each contactor is controlled by a separate circuit card. For a four row distribution cabinet assembly, row 1 (A) and row 2 (B) are controlled by the same circuit card.

  The customer can set the low voltage disconnect circuits to either automatically reconnect battery and output to the controlled loads, or require a user to manually reconnect battery and output to the controlled loads.

  When set for automatic reconnect, the low voltage disconnect circuits automatically reconnect the battery and output to the controlled loads when battery voltage recovers to a preset adjustable value.

  When set for manual reconnect, the battery and output are prevented from being reconnected to the controlled loads automatically, and must be manually reconnected by the user issuing a command via the VPS's MCA. This must be done after battery voltage recovers to a preset adjustable value.

  A local switch is provided to allow the operation of the low voltage disconnect circuit to be inhibited for adjustment, maintenance, and repair purposes. A local indicator illuminates when the low voltage disconnect circuit has been inhibited.

  Note: *Lists V and W also provides a VPS Low Voltage Disconnect circuit card (486384500). Operation of this circuit card is the same as described above, except this circuit card disconnects the battery from the system and load(s) if battery voltage decreases below a preset adjustable value.*

Ordering Notes

1) Factory mounted in relay rack ordered per Table 11 (Relay Rack Options).
2) Order one (1) VPS distribution bus panel as required per VPS DISTRIBUTION BUS ARRANGEMENTS table and appropriate Lists.
3) Order interface components for PCU Shelf(s) as required per Lists 5, 6, 7, 8, 9, 10, 14, 15, 16 and/or 17.

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4) Order PCU Shelf(s) and shelf options as required per Lists 24, 26, 27 and/or 32; and the appropriate shelf Power Data Sheet.
5) Order PCU's as required per List 18, 19, 20, 21, or 25.
6) Order battery and load distribution fuses and/or circuit breakers as required per Tables 2, 3, 4, and 5 (Distribution Devices).
7) Order input and load distribution lugs as required per Tables 6, 7, 8, 9, and 10 (Lugs).
8) Order additional accessory options as required per List 40, 41, and 90.
9) Order converter shelf(s) and modules as required per Lists 28, 29, 30, and/or 31.
10) Order Vortex® SMART as required per List 70.
11) Order Vortex® WinLink Hardware and Software as required per List 72 and 73.

List 2: Vortex® Power System (VPS) with Two (2) Row Distribution Cabinet

List of Parts

Features

- Provides common equipment for one "power and distribution" bay rated for up to 1000 amperes of distribution (500 amperes per row).
- Designed for two distribution bus panels.
- See also the description of the Shunt POD circuit card under List 1 features.
- See also the description of the Low Voltage Disconnect circuit card under List 1 features.

Ordering Notes

1) Factory mounted in relay rack ordered per Table 11 (Relay Rack Options).
2) Order two (2) VPS distribution bus panels as required per VPS DISTRIBUTION BUS ARRANGEMENTS table and appropriate Lists.
3) Order interface components for PCU Shelf(s) as required per Lists 5, 6, 7, 8, 9, 10, 14, 15, 16 and/or 17.
4) Order PCU Shelf(s) and shelf options as required per Lists 24, 26, 27 and/or 32; and the appropriate shelf Power Data Sheet.
5) Order PCU's as required per List 18, 19, 20, 21, or 25.
6) Order battery and load distribution fuses and/or circuit breakers as required per Tables 2, 3, 4, and 5 (Distribution Devices).
7) Order input and load distribution lugs as required per Tables 6, 7, 8, 9, and 10 (Lugs).
8) Order additional accessory options as required per List 40, 41, and 90.
9) Order converter shelf(s) and modules as required per Lists 28, 29, 30, and/or 31.
10) Order Vortex® SMART as required per List 70.
11) Order Vortex® WinLink Hardware and Software as required per List 72 and 73.

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List 3: Vortex® Power System (VPS) with Three (3) Row Distribution Cabinet

List of Parts Home

Features

- Provides common equipment for one "power and distribution" bay rated for up to 1200 amperes of distribution (500 amperes per row).
- Designed for three distribution bus panels.
- See also the description of the Shunt POD circuit card under List 1 features.
- See also the description of the Low Voltage Disconnect circuit card under List 1 features.

Ordering Notes

1) Factory mounted in relay rack ordered per Table 11 (Relay Rack Options).
2) Order three (3) VPS distribution bus panels as required per VPS DISTRIBUTION BUS ARRANGEMENTS table and appropriate Lists.
3) Order interface components for PCU Shelf(s) as required per Lists 5, 6, 7, 8, 9, 10, 14, 15, 16 and/or 17.
4) Order PCU Shelf(s) and shelf options as required per Lists 24, 26, 27 and/or 32; and the appropriate shelf Power Data Sheet.
5) Order PCU's as required per List 18, 19, 20, 21, or 25.
6) Order battery and load distribution fuses and/or circuit breakers as required per Tables 2, 3, 4, and 5 (Distribution Devices).
7) Order input and load distribution lugs as required per Tables 6, 7, 8, 9, and 10 (Lugs).
8) Order additional accessory options as required per List 40, 41, and 90.
9) Order converter shelf(s) and modules as required per Lists 28, 29, 30, and/or 31.
10) Order Vortex® SMART as required per List 70.
11) Order Vortex® WinLink Hardware and Software as required per List 72 and 73.

List 4: Vortex® Power System (VPS) with Four (4) Row Distribution Cabinet

List of Parts

Features

- Provides common equipment for one "power and distribution" bay rated for up to 1200 amperes of distribution (500 amperes per row).
- Designed for four distribution bus panels.
- See also the description of the Shunt POD circuit card under List 1 features.
- See also the description of the Low Voltage Disconnect circuit card under List 1 features.

Ordering Notes

1) Factory mounted in relay rack ordered per Table 11 (Relay Rack Options).
2) Order four (4) VPS distribution bus panels as required per VPS DISTRIBUTION BUS ARRANGEMENTS table and appropriate Lists.
3) Order interface components for PCU Shelf(s) as required per Lists 5, 6, 7, 8, 9, 10, 14, 15, 16 and/or 17.
4) Order PCU Shelf(s) and shelf options as required per Lists 24, 26, 27 and/or 32; and the appropriate shelf Power Data Sheet.

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5) Order PCU's as required per List 18, 19, 20, 21, or 25.
6) Order battery and load distribution fuses and/or circuit breakers as required per Tables 2, 3, 4, and 5 (Distribution Devices).
7) Order input and load distribution lugs as required per Tables 6, 7, 8, 9, and 10 (Lugs).
8) Order additional accessory options as required per List 40, 41, and 90.
9) Order converter shelf(s) and modules as required per Lists 28, 29, 30, and/or 31.
10) Order Vortex® SMART as required per List 70.
11) Order Vortex® WinLink Hardware and Software as required per List 72 and 73.

List 5: Interface Components for One (1) V100ICAB Intelligence Shelf

List of Parts

Features

- Provides components to add one (1) Model V100ICAB (-48V/100A), Spec. No. 588701300, VPS Intelligence Shelf to the power system.

Restrictions

Includes PCU shelf to distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588701300/PD588701400.
2) Order PCU Shelf options as required per PD588701300/PD588701400.
3) Order PCU's as required per List 20. Each shelf holds up to four (4) PCU's.

List 6: Interface Components for One (1) V100ECAB Expansion Shelf

List of Parts

Features

- Provides components to add one (1) Model V100ECAB (-48V/100A), Spec. No. 588701400, VPS Expansion Shelf to the power system.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588701300/PD588701400.
2) Order PCU Shelf options as required per PD588701300/PD588701400.
3) Order PCU's as required per List 20. Each shelf holds up to four (4) PCU's.
4) Order DC interconnect jumpers as required.
   Ist and 2nd V100ECAB Shelf, order 500451 for each shelf required
   3rd and 4th V100ECAB Shelf, order 500452 for each shelf required.

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List 7: Interface Components for One (1) V200ICAB Intelligence Shelf

List of Parts Home

Features

- Provides components to add one (1) Model V200ICAB (-48V/200A), Spec. No. 588700701, VPS Intelligence Shelf to the power system.

Restrictions

Includes PCU shelf to distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588700701/PD588700801.
2) Order PCU Shelf options as required per Lists 24 or 27, and 32; and PD588700701/PD588700801.
3) Order PCU's as required per List 21. Each shelf holds up to four (4) PCU's.

List 8: Interface Components for One (1) V200ECAB Expansion Shelf

List of Parts

Features

- Provides components to add one (1) Model V200ECAB (-48V/200A), Spec. No. 588700801, VPS Expansion Shelf to the power system. ***Note:*** *See also* List 12.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588700701/PD588700801.
2) Order PCU Shelf options as required per Lists 24 or 27, and 32; and PD588700701/PD588700801.
3) Order PCU's as required per List 21. Each shelf holds up to four PCU's.

List 9: Interface Components for One (1) V400ICAB Intelligence Shelf

List of Parts

Features

- Provides components to add one (1) Model V400ICAB (+24V/400A), Spec. No. 588701101, VPS Intelligence Shelf to the power system.

Restrictions

Includes PCU shelf to distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588701101/PD588701201.
2) Order PCU Shelf options as required per Lists 26 or 27, and 32; and PD588701101/PD588701201.
3) Order PCU's as required per List 25. Each shelf holds up to four (4) PCU's.

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List 10: Interface Components for One (1) V400ECAB Expansion Shelf

List of Parts

Features

- Provides components to add one (1) Model V400ECAB (+24V/400A), Spec. No. 588701201, VPS Expansion Shelf to the power system. ***Note:*** *See also* List 13.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588701101/PD588701201.
2) Order PCU Shelf options as required per Lists 26 or 27, and 32; and PD588701101/PD588701201.
3) Order PCU's as required per List 25. Each shelf holds up to four (4) PCU's.

List 12: Interface Components for One (1) V200ECAB Expansion Shelf (Field Retrofit)

List of Parts

Features

- Provides components to add one (1) Model V200ECAB (-48V/200A), Spec. No. 588700801, VPS Expansion Shelf to a previously installed power system for expansion or replacement.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Same as List 8 but provides a special cable to interface with a previously installed older style VPS Intelligence Shelf (Spec. No. 588700700).

Ordering Notes

1) Order PCU Shelf as required per PD588700701/PD588700801.
2) Order PCU Shelf options as required per Lists 24 or 27, and 32; and PD588700701/PD588700801.
3) Order PCU's as required per List 21. Each shelf holds up to four (4) PCU's.

List 13: Interface Components for One (1) V400ECAB Expansion Shelf (Field Retrofit)

List of Parts

Features

- Provides components to add one (1) Model V400ECAB (+24V/400A), Spec. No. 588701201, VPS Expansion Shelf to a previously installed power system for expansion or replacement.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Same as List 10 but provides a special cable to interface with a previously installed older style VPS Intelligence Shelf (Spec. No. 588701100).

Ordering Notes

1) Order PCU Shelf as required per PD588701101/PD588701201.
2) Order PCU Shelf options as required per Lists 26 or 27, and 32; and PD588701101/PD588701201.
3) Order PCU's as required per List 25. Each shelf holds up to four (4) PCU's.

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List 14: Interface Components for One (1) V260ICAB Intelligence Shelf

List of Parts

Features

- Provides components to add one (1) Model V260ICAB (-48V/260A), Spec. No. 588703600, VPS Intelligence Shelf to the power system.

Restrictions

Includes PCU shelf to distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588703600/PD588703700.
2) Order PCU Shelf options as required per Lists 24 or 27; and PD588703600/PD588703700.
3) Order PCU's as required per List 18. Each shelf holds up to four (4) PCU's.

List 15: Interface Components for One (1) V260ECAB Expansion Shelf

List of Parts

Features

- Provides components to add one (1) Model V260ECAB (-48V/260A), Spec. No. 588703700, VPS Expansion Shelf to the power system.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588703600/PD588703700.
2) Order PCU Shelf options as required per Lists 24 or 27; and PD588703600/PD588703700.
3) Order PCU's as required per List 18. Each shelf holds up to four (4) PCU's.

List 16: Interface Components for One (1) V520ICAB Intelligence Shelf

List of Parts

Features

- Provides components to add one (1) Model V520ICAB (+24V/520A), Spec. No. 588703800, VPS Intelligence Shelf to the power system.

Restrictions

Includes PCU shelf to distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588703800/PD588703900.
2) Order PCU Shelf options as required per Lists 26 or 27; and PD588703800/PD588703900.
3) Order PCU's as required per List 19. Each shelf holds up to four (4) PCU's.

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List 17: Interface Components for One (1) V520ECAB Expansion Shelf

List of Parts

Features

- Provides components to add one (1) Model V520ECAB (+24V/520A), Spec. No. 588703900, VPS Expansion Shelf to the power system.

Restrictions

Includes PCU shelf to power system/distribution cabinet assembly interconnect components only.

Ordering Notes

1) Order PCU Shelf as required per PD588703800/PD588703900.
2) Order PCU Shelf options as required per Lists 26 or 27; and PD588703800/PD588703900.
3) Order PCU's as required per List 19. Each shelf holds up to four (4) PCU's.

List 18: V65B50 PCU

List of Parts

Features

- Provides one (1) Model V65B50, Spec. No. 486531800, 65 ampere / 48 volt power conversion unit.
- Refer to PD588703600/PD588703700 for PCU specifications.

Restrictions

For use in Model V260ICAB and V260ECAB PCU Shelves (List 14, List 15).

Ordering Notes

1) Each shelf holds up to four PCU's.

List 19: V130B25 PCU

List of Parts

Features

- Provides one (1) Model V130B25, Spec. No. 486531900, 130 ampere / 24 volt power conversion unit.
- Refer to PD588703800/PD588703900 for PCU specifications.

Restrictions

For use in Model V520ICAB and V520ECAB PCU Shelves (List 16, List 17).

Ordering Notes

1) Each shelf holds up to four PCU's.

List 20: V25B50 PCU

List of Parts

Features

- Provides one (1) Model V25B50, Spec. No. 486530300, 25 ampere / 48 volt power conversion unit.
- Refer to PD588701300/PD588701400 for PCU specifications.

Restrictions

For use in Model V100ICAB and V100ECAB PCU Shelves (List 5, List 6).

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Ordering Notes

1) Each shelf holds up to four PCU's.

List 21: V50B50 PCU

List of Parts

Features

- Provides one (1) Model V50B50, Spec. No. 486529901, 50 ampere / 48 volt power conversion unit.
- Refer to PD588700701/PD588700801 for PCU specifications.

Restrictions

For use in Model V200ICAB and V200ECAB PCU Shelves (List 7, List 8).

Ordering Notes

1) Each shelf holds up to four PCU's.

List 25: V100B25 PCU

List of Parts

Features

- Provides one (1) Model V100B25, Spec. No. 486529601, 100 ampere / 25 volt power conversion unit.
- Refer to PD588701101/PD588701201 for PCU specifications.

Restrictions

For use in Model V400ICAB and V400ECAB PCU Shelves (List 9, List 10).

Ordering Notes

1) Each shelf holds up to four PCU's.

List 24: Optional PCU Shelf Class B Filter, -48V

List of Parts

Features

- When installed, system meets FCC Part 15 Subpart B Class B and CISPR 22 Class B conducted and radiated emissions.
- Consists of four Part No. 433800199 Input Filter Assemblies (one for each PCU mounting position in a single shelf) and capacitor pigtail assemblies. Refer to PD588700701/PD588700801 and PD588703600/PD588703700 for further description.

Restrictions

For use with Model V200ICAB, V200ECAB, V260ICAB, and V260ECAB PCU Shelves only.

Cannot be installed if List 27 ordered. The PCU shelf can only accommodate List 24 **or** List 27, **not** both.

Not available for V100ICAB or V100ECAB PCU Shelves.

Ordering Notes

1) Specify one (1) List 24 per PCU shelf.

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List 26: Optional PCU Shelf Class B Filter, +24V

List of Parts

Features

- When installed, system meets FCC Part 15 Subpart B Class B and CISPR 22 Class B conducted and radiated emissions.
- Consists of four Part No. 433800199 Input Filter Assemblies (one for each PCU mounting position in a single shelf) and capacitor pigtail assemblies. Refer to PD588701101/PD588701201 and PD588703800/PD588703900 for further description.

Restrictions

For use with Model V400ICAB, V400ECAB V520ICAB, and V520ECAB PCU Shelves only.

Cannot be installed if List 27 ordered. The PCU shelf can only accommodate List 26 **or** List 27, **not** both.

Not available for V100ICAB or V100ECAB PCU Shelves.

Ordering Notes

1) Specify one (1) List 26 per PCU shelf.

List 27: Optional PCU Shelf High AC Input Voltage Disconnect and Reconnect

List of Parts

Features

- When installed, PCU's are protected against damage due to AC input voltage exceeding 300V RMS.
- Consists of four Part No. 486390500 High AC Input Voltage Disconnect and Reconnect circuit card assemblies (one for each PCU mounting position in a single shelf). Refer to PD588700701/PD588700801, PD588701101/PD588701201, PD588703600/PD588703700, and PD588703800/PD588703900 for further description.

Restrictions

For use with Model V200ICAB, V200ECAB, V260ICAB, V260ECAB, V400ICAB, V400ECAB, V520ICAB, and V520ECAB PCU Shelves only.

Cannot be installed if List 24 or 26 ordered. The PCU shelf can only accommodate List 24/26 **or** List 27, **not** both.

Not available for V100ICAB or V100ECAB Shelves.

Ordering Notes

1) Specify one (1) List 27 per PCU shelf.

List 32: Optional PCU Shelf AC Input Line Cords, length 14 ft.

List of Parts

Features

- Provides four (4) fourteen foot long AC input line cords, one per PCU mounting position.

Restrictions

For use with Model V200ICAB, V200ECAB, V400ICAB, and V400ECAB PCU Shelves only.

Not available for V100ICAB, V100ECAB, V260ICAB, V260ECAB, V520ICAB, and V520ECAB PCU Shelves.

Ordering Notes

1) Specify one (1) List 32 per PCU shelf.

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List 28: Optional Main 30A Converter Cabinet (1st) List of Parts

Features

- Provides Model MZHSA30CAB, Spec. No. 588241300, +24V to -48V DC-DC 30A Converter Cabinet.
- Holds up to ten (10) converter modules.
- Also includes two 50A circuit breakers (provides input power to the Converter Cabinet from the +24V distribution).
- For more information, refer to PD588241300.

Restrictions

For use in +24V systems.

Must be accommodated by one dual voltage bus distribution panel assembly.

Ordering Notes

1) Order List 28 for the first Converter Cabinet.
2) Also order up to ten (10) converter modules (List 30).

List 29: Optional Supplemental 30A Converter Cabinet (2nd) List of Parts

Features

- Provides Model MZHSA30CAB, Spec. No. 588241300, +24V to -48V DC-DC 30A Converter Cabinet.
- Holds up to ten (10) converter modules.
- Also includes two 50A circuit breakers (provides input power to the Converter Cabinet from the +24V distribution).
- For more information, Refer to PD588241300.

Restrictions

For use in +24V systems.

Ordering Notes

1) Order List 29 for the second Converter Cabinet.
2) Order up to ten (10) converter modules (List 30).

List 30: Optional 3A Converter Modules List of Parts

Features

- Provides Model MZHSA3B, Spec. No. 486808500, +24V to -48V (3 ampere) Converter Module
- For more information, refer to PD588241300 or PD588240600.

Restrictions

For use in +24V systems.

For use with Lists 28, 29, and 31 only.

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List 31: Optional 15A Converter Cabinet

List of Parts

Features

- Provides Model MZHSA15CAB, Spec. No. 588240600, +24V to -48V DC-DC 15A Converter Cabinet.
- Holds up to five (5) converter modules.
- Also includes one 50A circuit breaker (provides input power to the Converter Cabinet from the +24V distribution).
- For more information, refer to PD588240600.

Restrictions

For use in +24V systems.

Must be accommodated by one dual voltage bus distribution panel assembly.

Ordering Notes

1) Order up to five (5) converter modules (List 30).

List 40: Optional Audible Alarm and Alarm Termination Circuit Card

List of Parts

Features

- Consists of an audible alarm sounding device connected into the MCA's external audible alarm contacts.
- Also provides an Alarm Termination circuit card (423356900 or 423356100). This circuit card is interconnected to J8 on the VPS Intelligence Shelf and (via relays on the circuit card) to external major and minor alarm circuits of the converter cabinet(s), if furnished. This circuit card provides screw-clamp type terminals for connection of customer wiring to the VPS Intelligence Shelf's external alarm circuits in lieu of the standard alarm cable. This circuit card also provides Form-C relay contacts for connection of external major and minor converter alarms, if converters are furnished.

Restrictions

To be installed in Main Bay only.

List 41: Optional Alarm Termination Circuit Card

List of Parts

Features

- Provides an Alarm Termination circuit card (423356900 or 423356100). This circuit card is interconnected to J8 on the VPS Intelligence Shelf and (via relays on the circuit card) to external major and minor alarm circuits of the converter cabinet(s), if furnished. This circuit card provides screw-clamp type terminals for connection of customer wiring to the VPS Intelligence Shelf's external alarm circuits in lieu of the standard alarm cable. This circuit card also provides Form-C relay contacts for connection of external major and minor converter alarms, if converters are furnished.

Restrictions

To be installed in Main Bay only.

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List 70: Vortex® SMART

List of Parts

Home

Features

- Provides a Vortex® SMART, Spec. No. 586504100 List 2. Refer to the Vortex® SMART instruction manual for further information.
- **MCA RS-485 Interface Option:** Also supplied with List 70 is an MCA RS-485 Interface Option, Spec. No. 483215400. This consists of an RS-485 Communications Interface circuit card, Spec. No. 486781400, plus associated hardware. This option plugs into the side of the VPS Intelligence Shelf.

  Allows VPS (MCA) interface to a SMART device, such as a Vortex® SMART or SMART DGU, via an RS-485 port.

  If the interface is a Lorain® SMART DGU, the DGU requires version 7.0 firmware (or greater) and a DGU/Vortex® Interface Circuit Card.

  A cable is also required which interconnects between the VPS and the SMART device. A 1-3/4 ft. long cable is provided with List 70, Part No. 500819. Other cable options include a standard length cable as specified in a) under Ordering Notes, or a customer specified length of cable as specified in b) and c) under Ordering Notes. The cable specified in b) and c) must be assembled by the customer.

Restrictions

Only one interface option (Vortex® WinLink Hardware or RS-485) can be installed on the VPS Intelligence Shelf.

Ordering Notes

1) **Other Cable Options**

   a) **RS-485 Interface Cable Assembly:**

      (1) Part No. 421842700. A six foot cable terminated at both ends with RJ-45 plugs. To be used with a SMART DGU.

      (2) Part No. 421843500. A six foot cable terminated at one end with an RJ-45 plug, and at the other end with a 9-pin male D-type plug. To be used with a Vortex® SMART.

   b) **RS-485 Interface Cable:** Part No. 156202100. A category 5, four twisted pair conductor, 24 gauge solid copper cable. Specify length in 5 feet increments. Also order termination kit specified in c).

   c) **RS-485 Interface Cable Termination Kit:**

      (1) Part No. 483589500. Consists of two RJ-45 plugs. To be used with a SMART DGU.

      (2) Part No. 483590800. Consists of one RJ-45 plug, one 9-pin male D-type plug, four snap-in crimp type contacts, and one cable clamp assembly kit. To be used with a Vortex® SMART.

List 72: Vortex® WinLink Hardware (Modem Interface)

List of Parts

Features

- Provides Spec. No. 483215200 which consists of a 2400 bits/s Modem circuit card, Spec. No. 486781300, plus associated hardware.
- This option plugs into the side of the VPS Intelligence shelf.

Restrictions

Only one interface option (Vortex® WinLink Hardware or RS-485 can be installed on the VPS Intelligence Shelf).

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Do not order this option when the VPS is to be interfaced with a Vortex® SMART or SMART DGU. Home

Ordering Notes

1) Order this option for each VPS System (MCA) to be accessed via Vortex® WinLink Software.

List 73: Vortex® WinLink Software List of Parts

Features

- Provides Spec. No. 041182000 (Vortex® WinLink Software).
- Vortex® WinLink Software provides the user the ability to remotely communicate with multiple VPS's equipped with the Vortex® WinLink Hardware option. Only one VPS can be remotely connected at a time. This allows a user to remotely monitor, control, and adjust the VPS via Vortex® WinLink. Remote communication is done over dial-up phone lines when the VPS is equipped with the modem interface.
- With Vortex® WinLink Software, the same tasks accomplished via the VPS's MCA local interface pad can be done remotely. This includes alarm monitoring, voltage/current monitoring, and adjustment of alarm and control circuits.
- The Vortex® WinLink software, Spec. No. 041182000, runs under the Windows 95/NT platform.

Ordering Notes

1) Only one List 73 required for each computer installation.

List 90: Battery Tray List of Parts

Features

- Provides a battery tray mounted at the bottom of the relay rack.

Ordering Notes

1) Order multiples of List 90 for more than one (1) battery tray.

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List A: Distribution Bus Module (Part No. 431653400) (24) Fuse/Circuit Breaker System Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (24) Load Distribution Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Can be installed in any bus position A-D (row 1-4).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

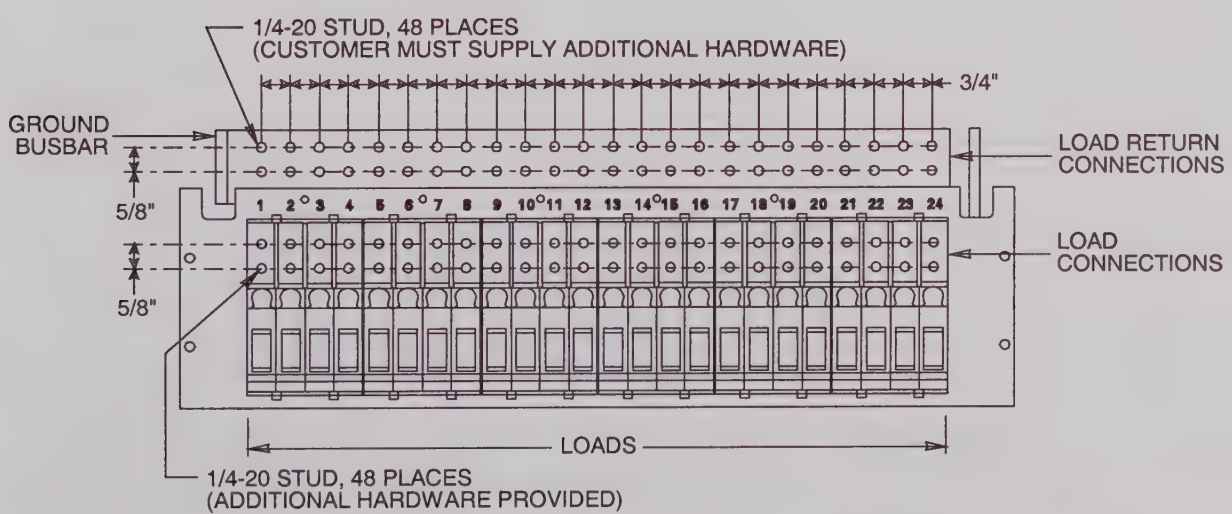
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).


1/4-20 STUD, 48 PLACES
(CUSTOMER MUST SUPPLY ADDITIONAL HARDWARE)
3/4"
GROUND BUSBAR
LOAD RETURN CONNECTIONS
5/8"
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
LOAD CONNECTIONS
5/8"
LOADS
1/4-20 STUD, 48 PLACES
(ADDITIONAL HARDWARE PROVIDED)

PART NO. 431653400 (582120000 List A)

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List B: Distribution Bus Module (Part No. 428108100) (20) –48V Fuse/Circuit Breaker System Positions w/LVD

Features

- Single Voltage Distribution (-48V)
- 500A Maximum Capacity
- (20) Load Distribution Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (48 Volt)

Restrictions

Can be installed in any bus position A-D (row 1-4).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

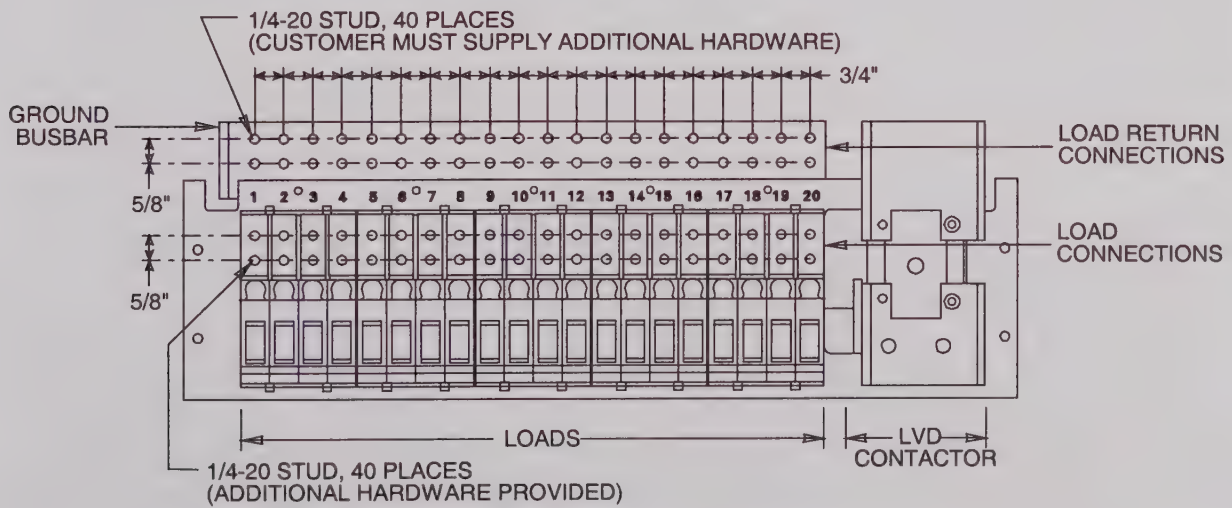
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108100 E/W -48V LVD Contactor (582120000 List B)

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List C: Distribution Bus Module (Part No. 428108200) (20) +24V Fuse/Circuit Breaker System Positions w/LVD

Features

- Single Voltage Distribution (+24V)
- 500A Maximum Capacity
- (20) Load Distribution Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (24 Volt)

Restrictions

Can be installed in any bus position A-D (row 1-4).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

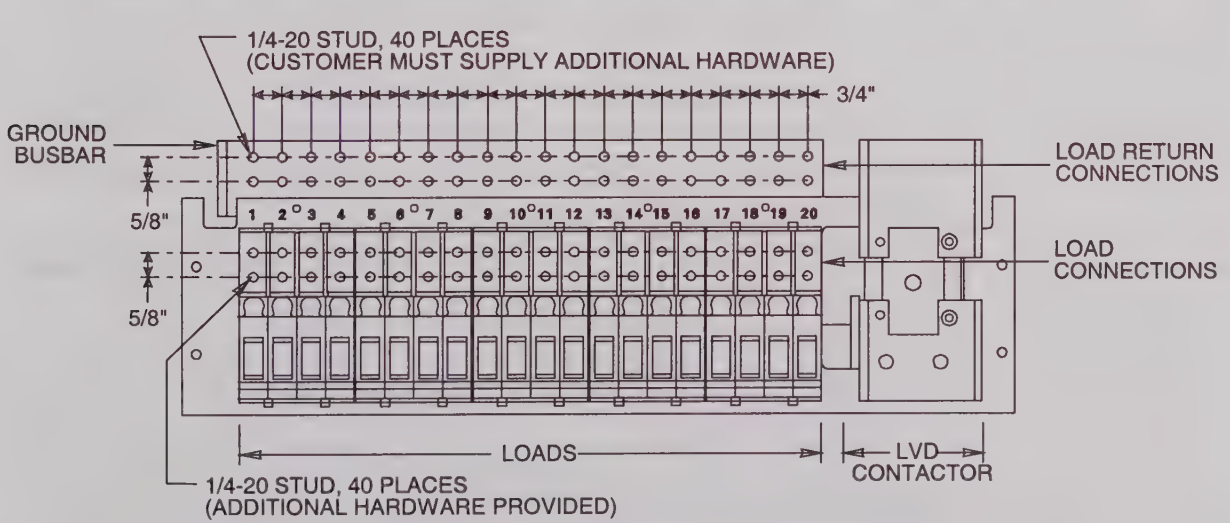
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108200 E/W +24V LVD Contactor (582120000 List C)

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List D: Distribution Bus Module (Part No. 431653500)
(16) Fuse/Circuit Breaker System Positions and (4) Fuse/Circuit Breaker Battery Disconnect Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (16) Load Distribution Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Battery Disconnect Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

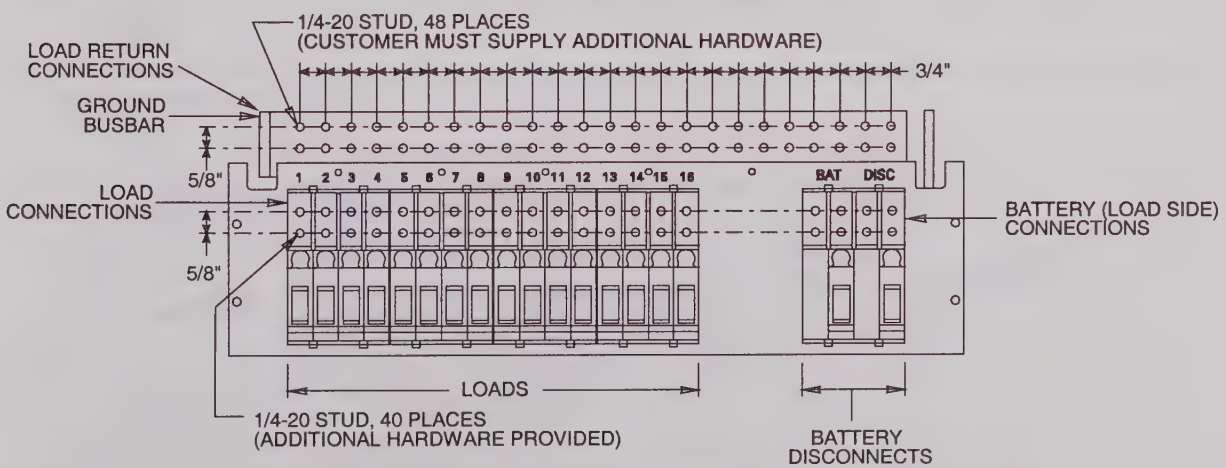
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load and battery lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431653500 (582120000 List D)

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List E: Distribution Bus Module (Part No. 431606700)
(12) Fuse/Circuit Breaker System Positions and (1) TPL Fuse Battery Disconnect Position

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (1) Battery Disconnect Fuse Mounting Position
  (70 to 600A TPL-Type)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

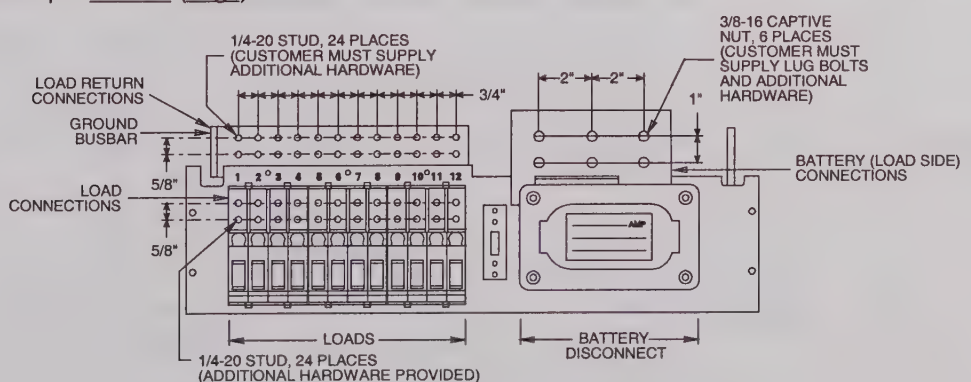
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single TPA-type fuseholder or LEL1-type circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order load fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order battery disconnect fuse as required per Table 2 (TPL-Type Fuses).
5) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).
6) Order battery lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each battery disconnect position per Table 7 (Lugs).



PART NO. 431606700 (582120000 List E)

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List F: Distribution Bus Module (Part No. 428108300) (12) –48V Fuse/Circuit Breaker System Positions w/LVD and (4) Fuse/Circuit Breaker Battery Disconnect Positions

Features

- Single Voltage Distribution (-48V)
- 500A Maximum Capacity
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Battery Disconnect Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (48 Volt)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

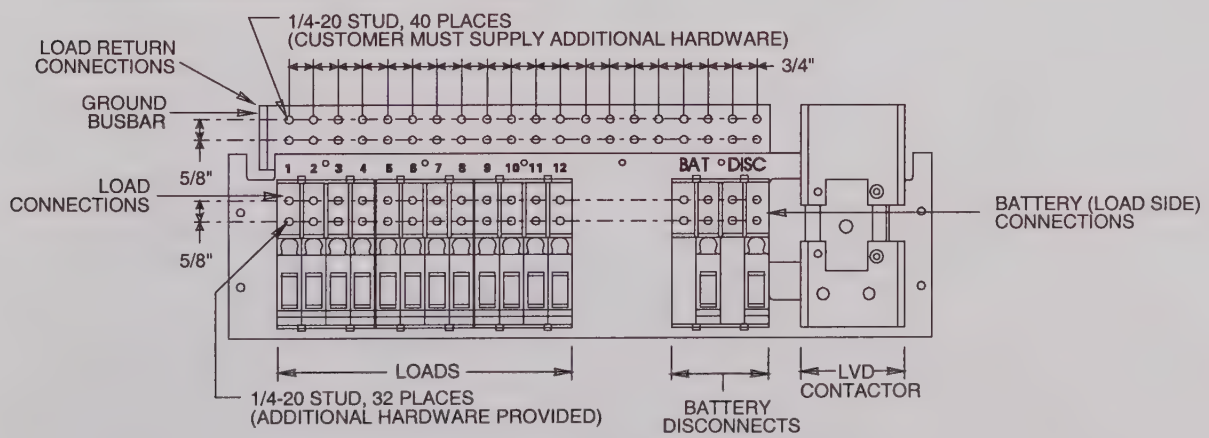
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load and battery lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108300 E/W -48V LVD Contactor (582120000 List F)

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List G: Distribution Bus Module (Part No. 428108500) (12) +24V Fuse/Circuit Breaker System Positions w/LVD and (4) Fuse/Circuit Breaker Battery Disconnect Positions

Features

- Single Voltage Distribution (+24V)
- 500A Maximum Capacity
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Battery Disconnect Fuse / Circuit Breaker Mounting Positions (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (24 Volt)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

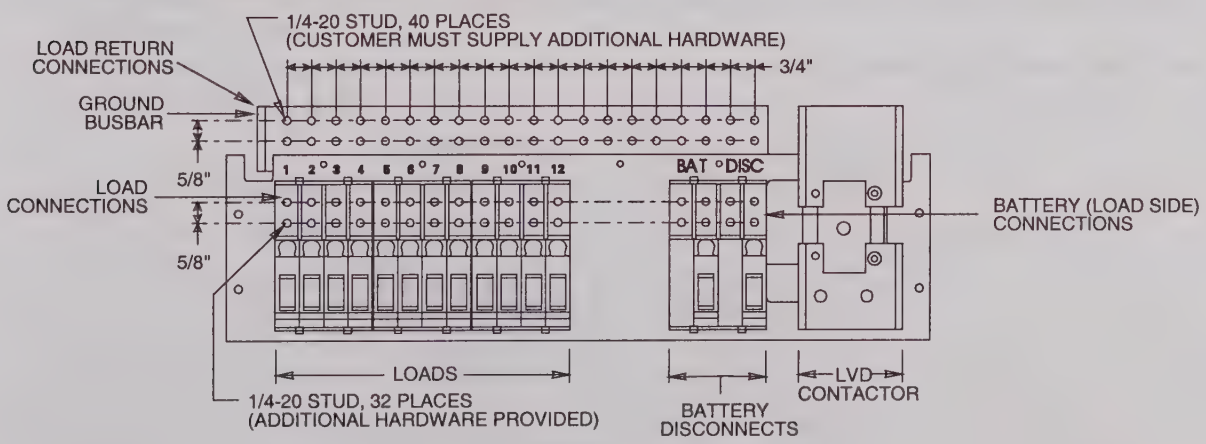
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load and battery lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108500 E/W +24V LVD Contactor (582120000 List G)

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List H: Distribution Bus Module (Part No. 428108400)
(8) –48V Fuse/Circuit Breaker System Positions w/LVD and (1) TPL Fuse Battery Disconnect Position

Features

- Single Voltage Distribution (-48V)
- 500A Maximum Capacity
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (1) Battery Disconnect Fuse Mounting Position
  (70 to 600A TPL-Type)
- Low Voltage Load Disconnect Contactor (48 Volt)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

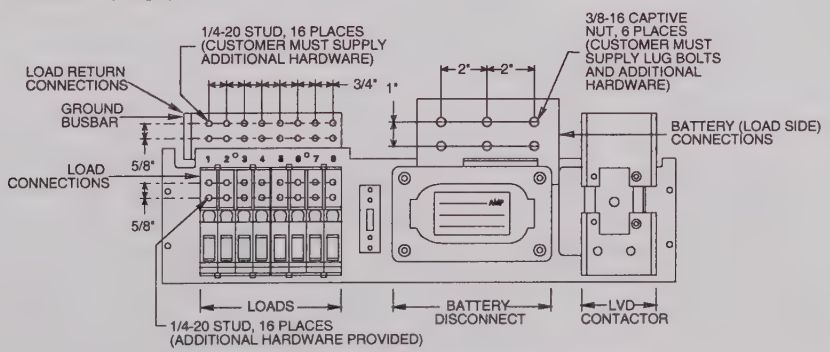
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single TPA-type fuseholder or LEL1-type circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order battery disconnect fuse as required per Table 2 (TPL-Type Fuses).
5) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).
6) Order battery lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each battery disconnect position per Table 7 (Lugs).



PART NO. 428108400 E/W -48V LVD Contactor (582120000 List H)

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List J: Distribution Bus Module (Part No. 428108600)
(8) +24V Fuse/Circuit Breaker System Positions w/LVD and (1) TPL Fuse Battery Disconnect Position

Features

- Single Voltage Distribution (+24V)
- 500A Maximum Capacity
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (1) Battery Disconnect Fuse Mounting Position
  (70 to 600A TPL-Type)
- Low Voltage Load Disconnect Contactor (24 Volt)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

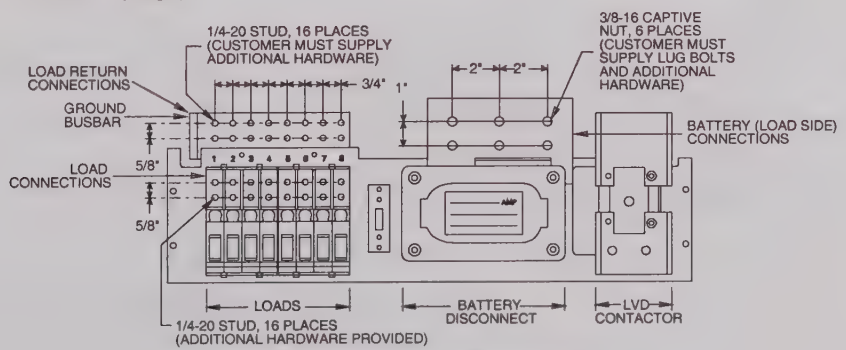
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single TPA-type fuseholder or LEL1-type circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order battery disconnect fuse as required per Table 2 (TPL-Type Fuses).
5) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).
6) Order battery lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each battery disconnect position per Table 7 (Lugs).



PART NO. 428108600 E/W +24V LVD Contactor (582120000 List J)

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List K: Distribution Bus Module (Part No. 431623300)
(16) +24V Fuse/Circuit Breaker System Positions and (4) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (16) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #23 and/or #24 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

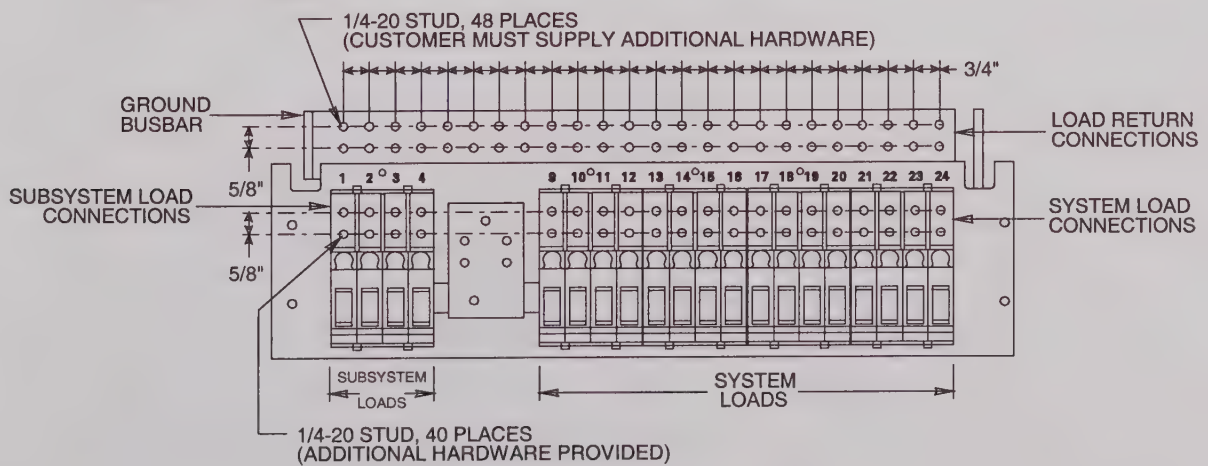
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431623300 (582120000 List K)

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List L: Distribution Bus Module (Part No. 431623400)
(12) +24V Fuse/Circuit Breaker System Positions and (8) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #23 and/or #24 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

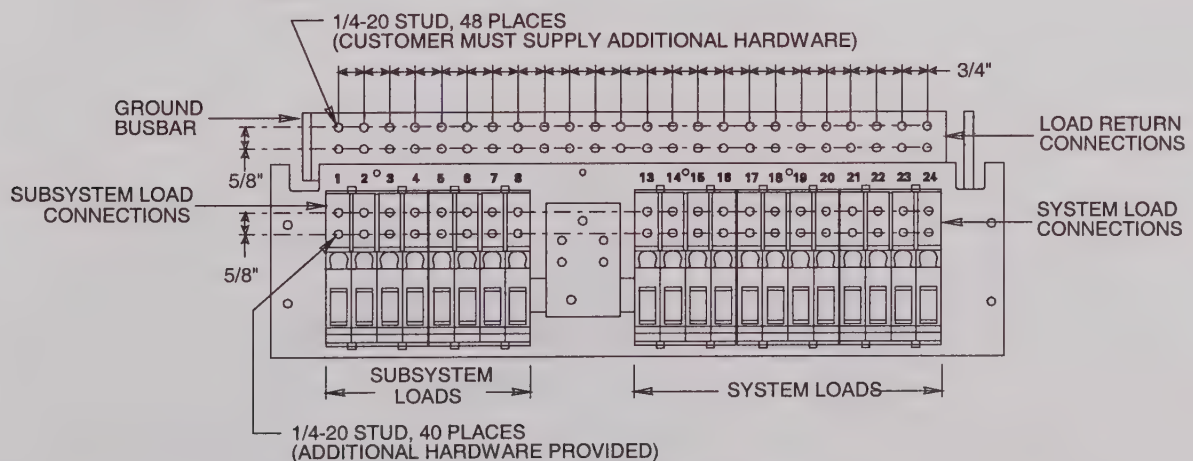
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431623400 (582120000 List L)

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List M: Distribution Bus Module (Part No. 431623500)
(8) +24V Fuse/Circuit Breaker System Positions and (12) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #23 and/or #24 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

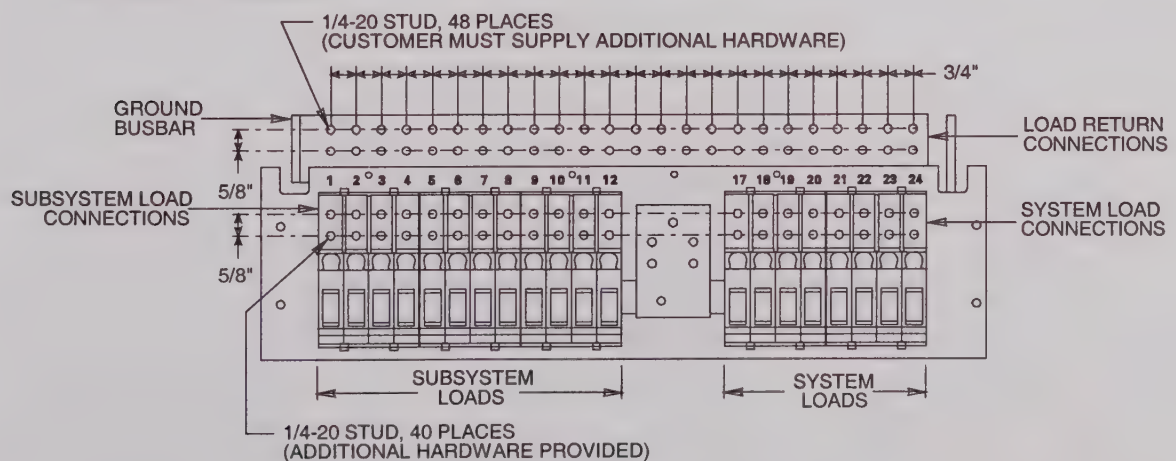
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431623500 (582120000 List M)

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List N: Distribution Bus Module (Part No. 431623600)
(4) +24V Fuse/Circuit Breaker System Positions and (16) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (4) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (16) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #23 and/or #24 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

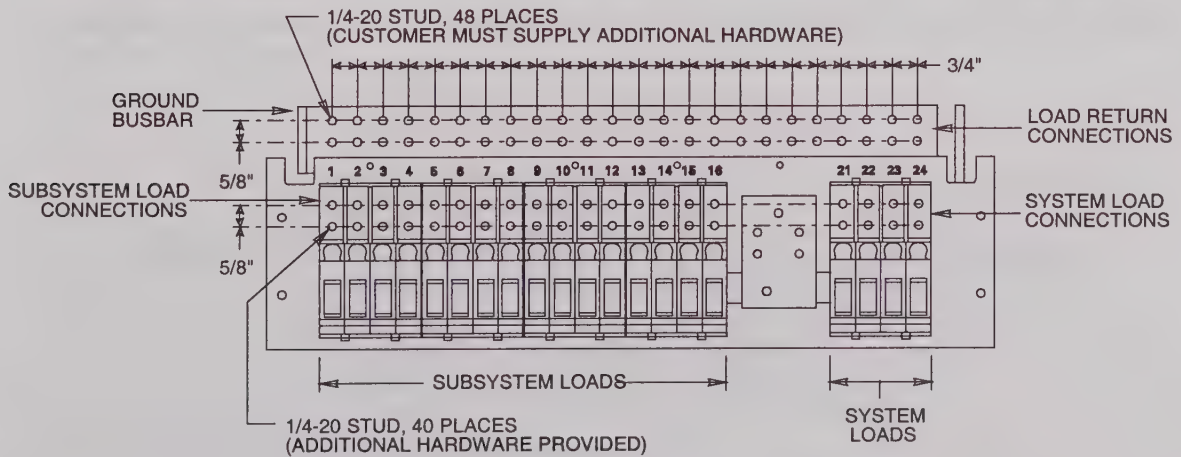
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431623600 (582120000 List N)

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List P: Distribution Bus Module (Part No. 428108700) (12) +24V Fuse/Circuit Breaker System Positions w/LVD and (4) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage)
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (24 Volt) (System Voltage)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #19 and/or #20 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

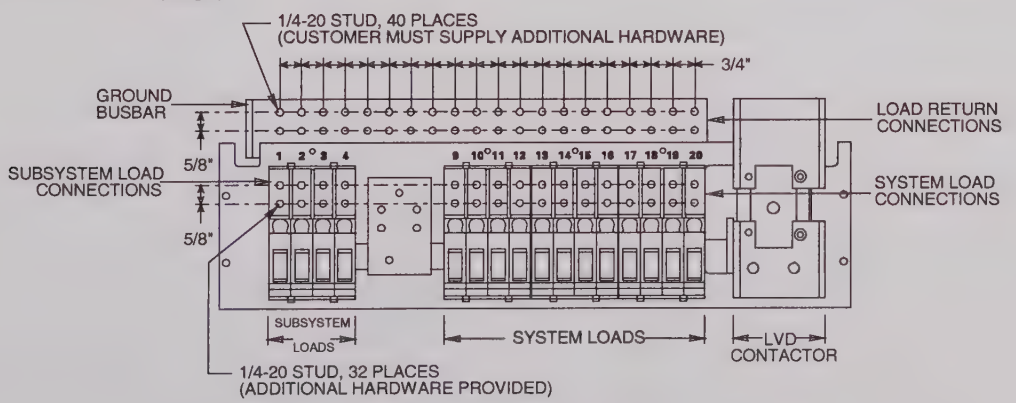
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108700 E/W +24V LVD Contactor (582120000 List P)

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List R: Distribution Bus Module (Part No. 428108800) (8) +24V Fuse/Circuit Breaker System Positions w/LVD and (8) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage) (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (8) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage) (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (24 Volt) (System Voltage)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #19 and/or #20 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

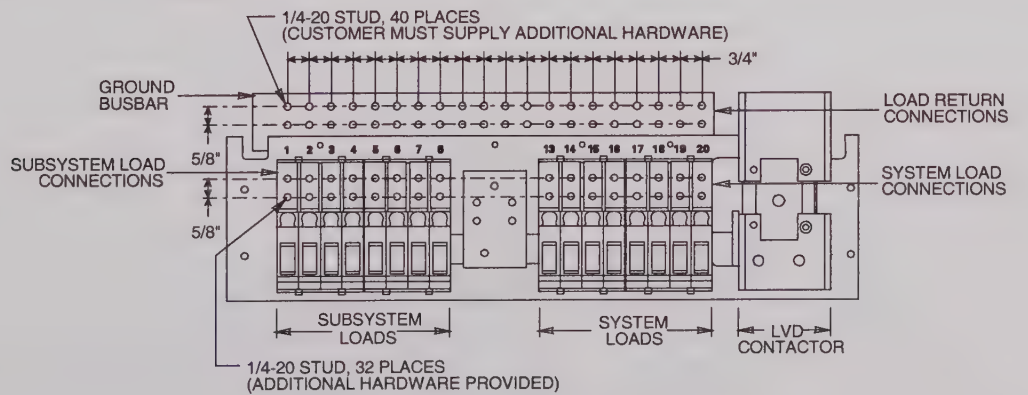
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108800 E/W +24V LVD Contactor (582120000 List R)

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List S: Distribution Bus Module (Part No. 428108900) (4) +24V Fuse/Circuit Breaker System Positions w/LVD and (12) –48V Fuse/Circuit Breaker Subsystem Positions

Features

- Dual Voltage Distribution (+24V and -48V)
- 500A Maximum Capacity
- (4) Load Distribution Fuse / Circuit Breaker Mounting Positions (+24V System Voltage) (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (12) Load Distribution Fuse / Circuit Breaker Mounting Positions (-48V Subsystem Voltage) (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- Low Voltage Load Disconnect Contactor (24 Volt) (System Voltage)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Can be installed in any bus position A-D (row 1-4).

Fuse/circuit breaker position #19 and/or #20 reserved for converter input.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

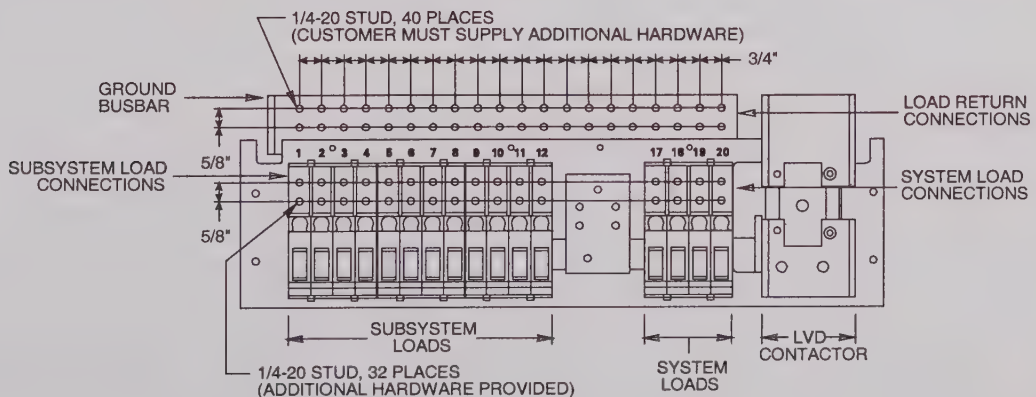
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 428108900 (582120000 List S)

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List T: Distribution Bus Module (Part No. 431409100) (2) TPL Fuse Battery Disconnect Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (2) Battery Disconnect Fuse Mounting Positions (70 to 600A TPL-Type)

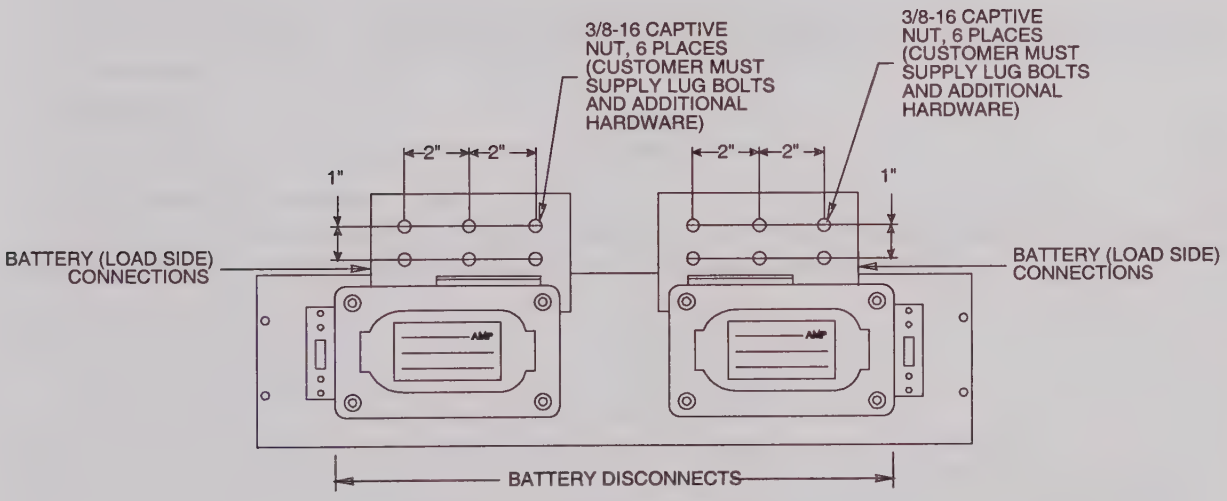
Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position A (row 1).

Ordering Notes

1) Order fuses as required per Table 2 (TPL-Type Fuses).
2) Order battery lugs (two hole, 3/8 bolt clearance hole, 1" centers) as required for each distribution position per Table 7 (Lugs).



PART NO. 431409100 (582120000 List T)

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List V: -48V 1200A Low Voltage Battery Disconnect Contactor and Control Circuit

Features

- Provides a battery disconnect contactor which is mounted in bus position A (row 1) of the VPS Distribution Cabinet Assembly.
- Also provides a Low Voltage Disconnect circuit card (486384500) connected to the contactor and controlled via the MCA. (See also the description of the low voltage disconnect circuit card under List 1 descriptions.)

Restrictions

Cannot be installed in a single bus row cabinet (582120000 List 1).

Must be installed in bus position A (row 1).

In a four bus row cabinet (582120000 List 4), cannot have a load contactor installed in bus position B (row 2). [LVD circuit card #1 controls both bus position A (row 1) and bus position B (row 2).]

List W: +24V 1200A Low Voltage Battery Disconnect Contactor and Control Circuit

Features

- Provides a battery disconnect contactor which is mounted in bus position A (row 1) of the VPS Distribution Cabinet Assembly.
- Also provides a Low Voltage Disconnect circuit card (486384500) connected to the contactor and controlled via the MCA. (See also the description of the low voltage disconnect circuit card under List 1 descriptions.)

Restrictions

Cannot be installed in a single bus row cabinet (582120000 List 1).

Must be installed in bus position A (row 1).

In a four bus row cabinet (582120000 List 4), cannot have a load contactor installed in bus position B (row 2). [LVD circuit card #1 controls both bus position A (row 1) and bus position B (row 2).]

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List AA: Distribution Bus Module (Part No. 428111100) (3) -48V GJ Circuit Breaker System Positions w/LVD

Features

- Single Voltage Distribution (-48V)
- 500A Maximum Capacity
- (3) Load Distribution Circuit Breaker Mounting Positions (100 to 600A GJ-Type) **NOTE RESTRICTIONS**
- Low Voltage Load Disconnect Contactor (48 Volt)

Restrictions

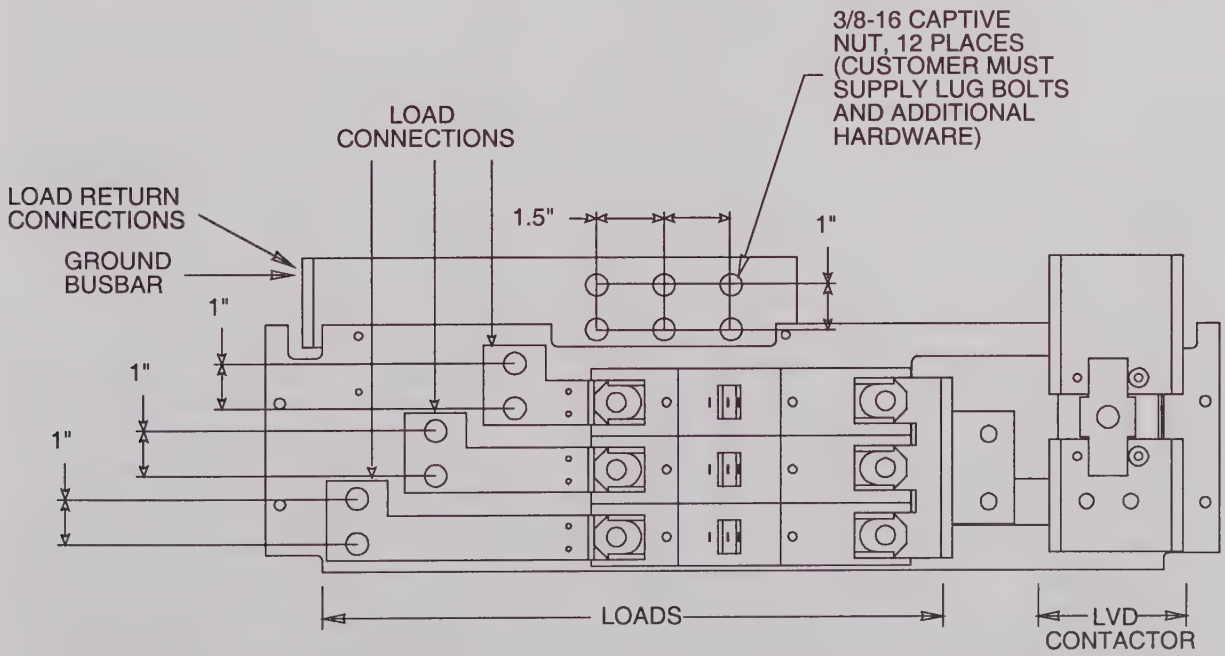
Can be installed in any bus position A-C (row 1-3). Cannot be installed in bus position D (row 4) of a four bus row cabinet.

Panel is designed to mount circuit breakers in the following possible combinations:

(3) 100A to 250A
(1) 100A to 250A and (1) 400A
(1) 400A
(1) 600A

Ordering Notes

1) Order circuit breakers and associated jumper kits as required per Table 5 (GJ-Type Circuit Breakers).
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 7 (Lugs).



PART NO. 428111100 E/W -48V LVD Contactor (582120000 List AA)

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List BB: Distribution Bus Module (Part No. 428111200) (3) +24V GJ Circuit Breaker System Positions w/LVD

Features

- Single Voltage Distribution (+24V)
- 500A Maximum Capacity
- (3) Load Distribution Circuit Breaker Mounting Positions (100 to 600A GJ-Type) **NOTE RESTRICTIONS**
- Low Voltage Load Disconnect Contactor (24 Volt)

Restrictions

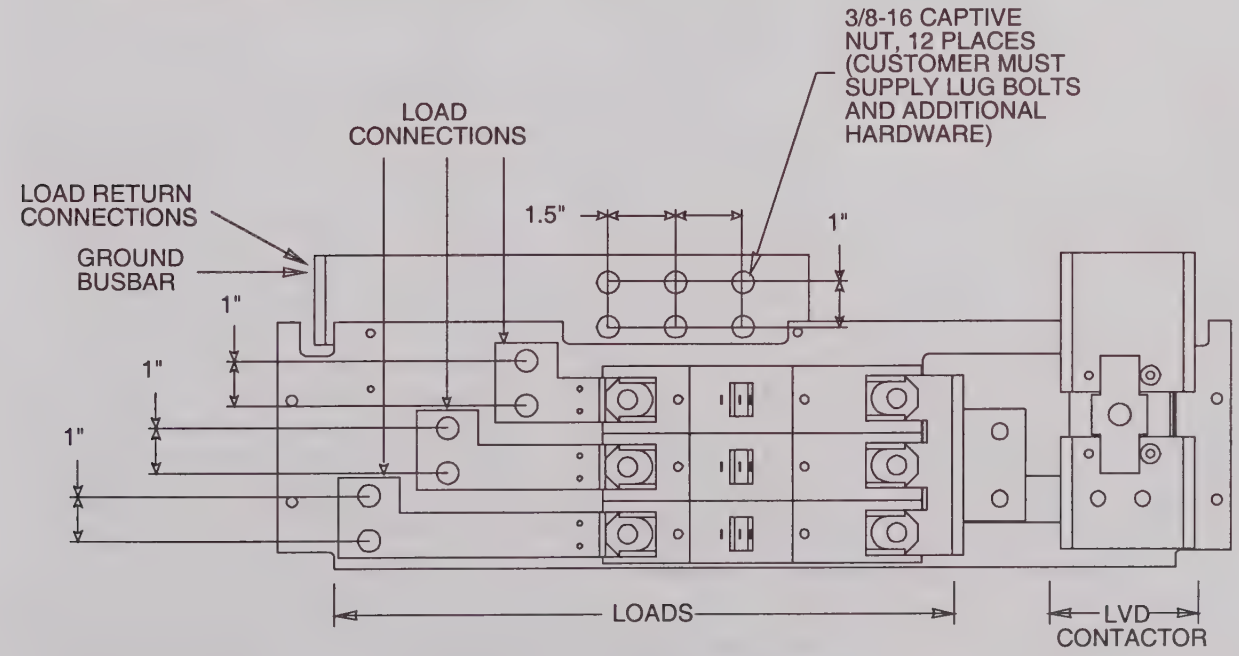
Can be installed in any bus position A-C (row 1-3). Cannot be installed in bus position D (row 4) of a four bus row cabinet.

Panel is designed to mount circuit breakers in the following possible combinations:

(3) 100A to 250A
(1) 100A to 250A and (1) 400A
(1) 400A
(1) 600A

Ordering Notes

1) Order circuit breakers and associated jumper kits as required per Table 5 (GJ-Type Circuit Breakers).
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 7 (Lugs).



PART NO. 428111200 E/W +24V LVD Contactor (582120000 List BB)

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List CC: Distribution Bus Module (Part No. 428316100) (3) GJ Circuit Breaker System Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (3) Load Distribution Circuit Breaker Mounting Positions (100 to 600A GJ-Type) **NOTE RESTRICTIONS**

Restrictions

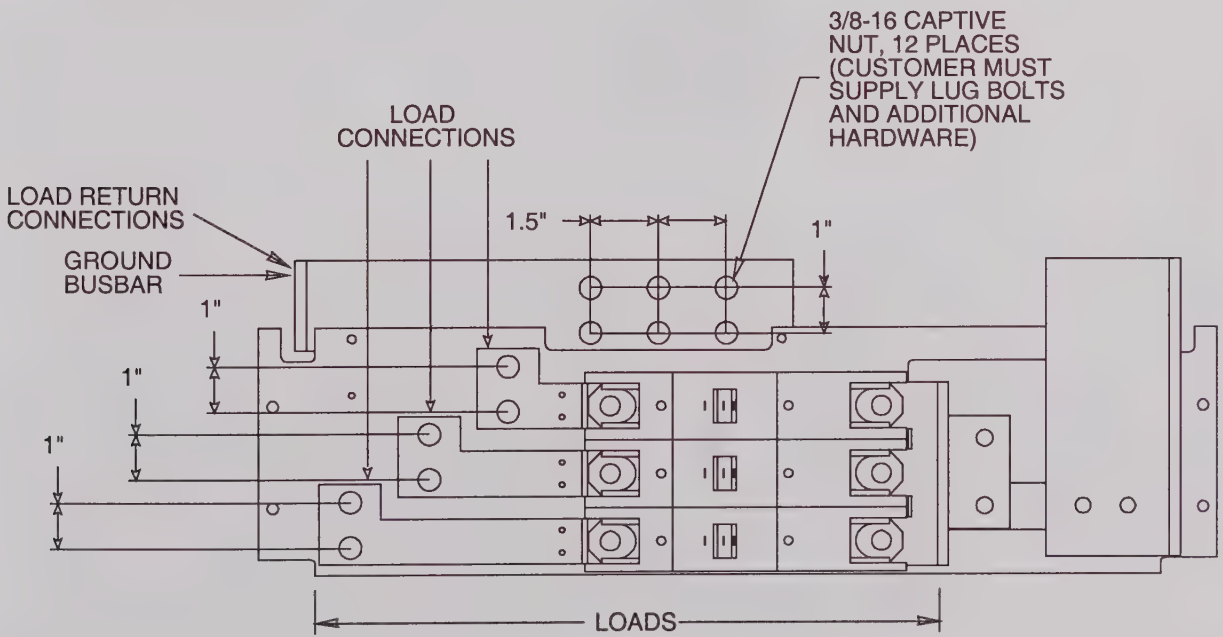
Can be installed in any bus position A-C (row 1-3). Cannot be installed in bus position D (row 4) of a four bus row cabinet.

Panel is designed to mount circuit breakers in the following possible combinations:

(3) 100A to 250A
(1) 100A to 250A and (1) 400A
(1) 400A
(1) 600A

Ordering Notes

1) Order circuit breakers and associated jumper kits as required per Table 5 (GJ-Type Circuit Breakers).
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 7 (Lugs).



PART NO. 428316100 (582120000 List CC)

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List DD: Distribution Bus Module (Part No. 428316200) (3) GJ Circuit Breaker Battery Disconnect Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (3) Battery Disconnect Circuit Breaker Mounting Positions (100 to 600A GJ-Type) **NOTE RESTRICTIONS**

Restrictions

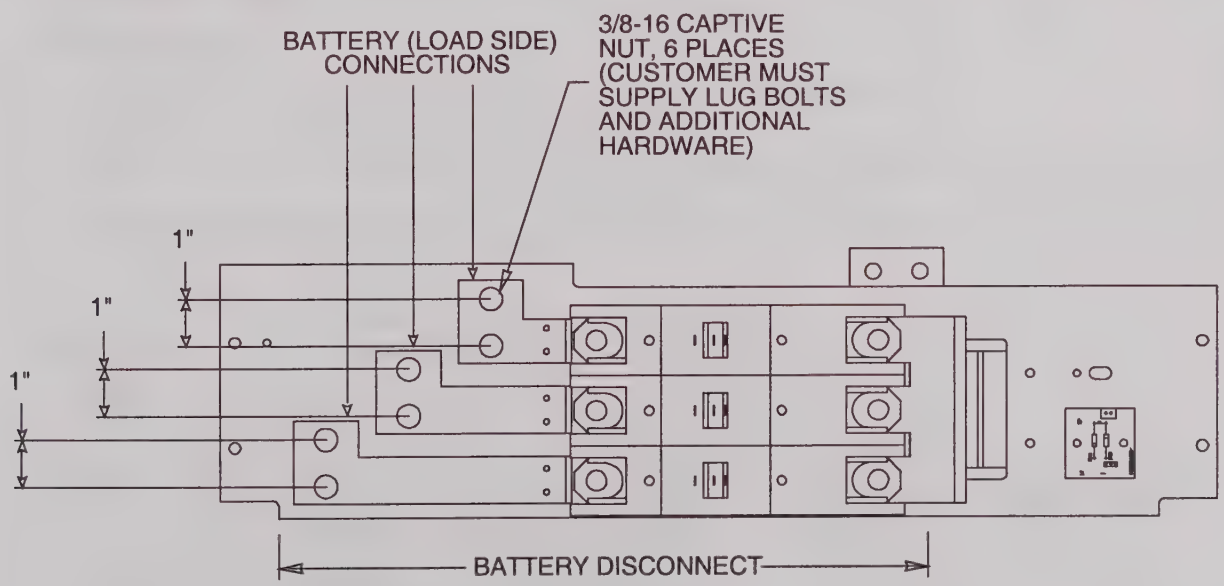
Must be installed in bus position A (row 1).

Panel is designed to mount circuit breakers in the following possible combinations:

(3) 100A to 250A
(1) 100A to 250A and (1) 400A
(1) 400A
(1) 600A

Ordering Notes

1) Order circuit breakers and associated jumper kits as required per Table 5 (GJ-Type Circuit Breakers).
2) Order battery lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 7 (Lugs).



PART NO. 428316200 (582120000 List DD)

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List JJ: Distribution Bus Module (Part No. 431653500)
(16) Fuse/Circuit Breaker System Positions and (4) Fuse/Circuit Breaker Battery Disconnect Positions

Features

- Single Voltage Distribution (+24V or -48V)
- 500A Maximum Capacity
- (16) Load Distribution Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)
- (4) Battery Disconnect Fuse / Circuit Breaker Mounting Positions
  (3 to 50A TPA-Type Fuses / 1 to 150A LEL1-Type Circuit Breakers)

Restrictions

Limit one bus arrangement of this type per cabinet assembly.

Must be installed in bus position B (row 2) of a 2, 3, or 4 row cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from right to left, starting with the highest capacity and working to the lowest capacity.

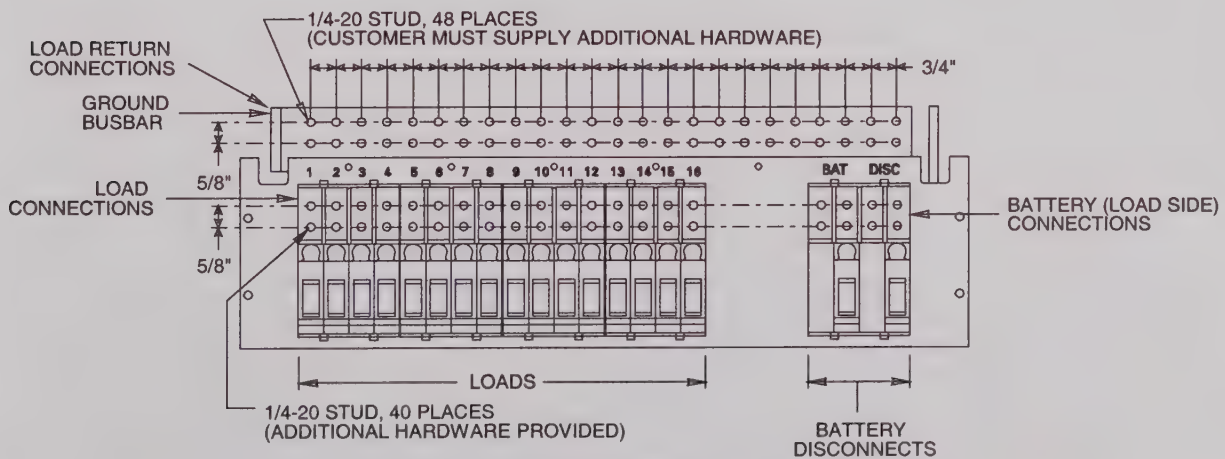
Circuit breakers with greater than 100 ampere rating occupy two mounting positions.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 gauge.

Ordering Notes

1) Order circuit breakers as required per Table 4 (LEL1-Type Circuit Breakers).
2) Order fuses as required per Table 3 (TPA-Type Fuses).
3) Order one (1) Part No. 248817350 fuseholder per fuse ordered in 2) above (see TPA-Type Fuses).
4) Order load and battery lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 6 or 8 (Lugs).



PART NO. 431653500 (582120000 List JJ)

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ACCESSORY INFORMATION

Distribution Devices

Replacement Alarm-Type Fuses

Not available for customer connected loads.

SAN-0 ALARM-TYPE FUSES		
AMPERE RATING	**PART NUMBER**	**FUSE COLOR**
1-1/3	248609000	WHITE
5	248609700	GREEN
SAFETY FUSE COVER	248898600	---

Table 1A

BUSSMANN ALARM-TYPE FUSES		
AMPERE RATING	**PART NUMBER**	**FUSE COLOR**
18/100 GMT-A	248610301	---
1/4	248610200	VIOLET
SAFETY FUSE COVER	248898700	---

Table 1B

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TPL-Type Fuses

A bus arrangement must be specified that contains a TPL-type fuseholder. For available fuse sizes, refer to Table 2. For lug and wire size selection, refer to Tables 7 (Lugs) and 10 (Lug and Wire Size Selection Tables).

TPL-TYPE FUSES		
AMPERE RATING	**PART NUMBER**	**For Lug and Wire Size Selection, Refer to the Table Indicated (see also Table 7 [Lugs])**
70	248251500	Table 10A
80	248252000	Table 10B
100	248252600	Table 10C
150	248253300	Table 10E
200	248254000	Table 10G
225	248254500	Table 10H
250	248255000	Table 10J
300	248255700	Table 10K
400	248257000	Table 10L
600	248259000	Table 10M

Table 2

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TPA-Type Fuses

A single fuseholder provides for installation of a 3 to 50 ampere Bussmann TPA-type fuse (as listed in Table 3). This fuseholder snaps into a single mounting position of a VPS modular fuseholder/circuit breaker mounting block. These blocks are provided on the various distribution bus options, as shown in the illustrations provided in this document. This fuseholder contains an indicator which illuminates red if the fuse contained in it opens.

Order fuses per Table 3.

Order one (1) Part No. 248817350 VPS TPA-type fuseholder for each fuse.

For lug and wire size selection, refer to Tables 6 (Lugs), 8 (Lugs), and 9 (Lug and Wire Size Selection Tables).

TPA-TYPE FUSES		
AMPERE RATING	**PART NUMBER**	**For Lug and Wire Size Selection, Refer to the Table Indicated (see also Tables 6 and 8 [Lugs])**
3	248230901	Table 9A
5	248231001	Table 9A
10	248231600	Table 9A
15	248231900	Table 9B
20	248232200	Table 9C
25	248232500	Table 9D
30	248232800	Table 9E
40	248233400	Table 9F
50	248234000	Table 9G
TPA-Type Fuseholder Module*	248817350	---

Table 3

* Fuseholders are not furnished and must be ordered as required. Order (1) 248817350 for each fuse position required.

Unless otherwise specified, fuses are to be mounted from right to left starting with the highest capacity and working to the lowest capacity.

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LEL1-Type Circuit Breakers

Each circuit breaker snaps into a single mounting position (except the 125A and 150A circuit breakers which occupy two mounting positions) of a VPS modular distribution fuseholder/circuit breaker mounting block. These blocks are provided on the various distribution bus options, as shown in the illustrations provided in this document.

Order circuit breakers per Table 4.

For lug and wire size selection, refer to Tables 6 (Lugs), 8 (Lugs), and 9 (Lug and Wire Size Selection Tables). When ordering 125A or 150A circuit breakers, associated crimp lugs must be ordered from Table 8 (Special Application Crimp Lugs).

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LEL1-TYPE CIRCUIT BREAKERS			
AMPERE RATING	PART NUMBER Electrical/ Mechanical Trip[1] (Black Handle)	PART NUMBER Electrical Trip[2] (White Handle)	For Lug and Wire Size Selection, Refer to the Table Indicated (see also Tables 6 and 8 [Lugs])
1	256690301	256690401	Table 9A
3	256690701	256690801	Table 9A
5	256691101	256691201	Table 9A
10	256691501	256691601	Table 9A
15	256691901	256692001	Table 9B
20	256692301	256692401	Table 9C
25	256692701	256692801	Table 9D
30	256693101	256693201	Table 9E
40	256693901	256694001	Table 9F
50	256694301	256694401	Table 9G
60	256694701	256694801	Table 9H
70 (see ***Caution*** below)	256695101	256695201	Table 9J
75 (see ***Caution*** below)	256695501	256695601	Table 9K
100 (see ***Caution*** below)	256695901	256696001	Table 9L
125 (see ***Caution*** below)	256642101	107025	Table 9M
150 (see ***Caution*** below)	256642201	107024	Table 9N

Table 4

Circuit Breaker Alarm Operation:

[1] Provides an alarm during an electrical or manual trip condition.

[2] Provides an alarm during an electrical trip condition only.

Caution: ***Circuit breaker with a 70 ampere or greater rating SHALL HAVE an empty mounting position between it and any other overcurrent protective device.***

Unless otherwise specified, breakers are to be mounted from right to left starting with the highest capacity and working to the lowest capacity.

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GJ-Type Circuit Breakers

A bus arrangement must be specified that contains GJ-type circuit breaker positions.

Order circuit breakers per Table 5.

Order a jumper kit for each circuit breaker as specified in the notes below Table 5.

For lug and wire size selection, refer to Tables 7 (Lugs) and 10 (Lug and Wire Size Selection Tables).

GJ-TYPE CIRCUIT BREAKERS				
AMPERE RATING	NUMBER OF POSITIONS	PART NUMBER Electrical/ Mechanical Trip[1]	PART NUMBER Electrical Trip[2]	For Lug and Wire Size Selection, Refer to the Table Indicated (see also Table 7 [Lugs])
100	1	256621700	256621300	Table 10C
125	1	256621600	256621400	Table 10D
150	1	256621800	256622400	Table 10E
175	1	256621900	256622500	Table 10F
200	1	256622200	256622600	Table 10G
225	1	256622900	256622700	Table 10H
250	1	256623500	256623400	Table 10J
400	2	256626200	256626300	Table 10L
600	3	256628200	103571	Table 10M

Table 5

Circuit Breaker Alarm Operation:

[1] Provides an alarm during an electrical or manual trip condition.

[2] Provides an alarm during an electrical trip condition only.

Order (1) Jumper Kit (P/N: 503787) for each 100A-250A circuit breaker

Order (1) Jumper Kit (P/N: 500133) for each 400A breaker

Order (1) Jumper Kit (P/N: 500131) for each 600A breaker

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Lugs

All lugs for customer connections must be ordered separately.

For lug selection, refer to Tables 6, 7, 8, 9, and 10.

For additional lug information, refer to Drawings 031110100 through 031110300.

Distribution (Load) Lugs

Distribution (load) lug requirements are determined by the distribution bus modules and fuses/circuit breakers ordered. Refer to the following for lug specifications.

A) When VPS Modular Distribution Fuseholder/Circuit Breaker Mounting Blocks (TPA-Type Fuses/LEL1-Type Circuit Breakers) are Provided:

Load conductors and lugs are connected to the VPS modular distribution fuseholder/circuit breaker mounting blocks and the respective distribution ground busbar(s). The VPS modular distribution fuseholder/circuit breaker mounting blocks provide 1/4-20 studs and mounting hardware for installation of customer provided two hole lugs with 5/8 inch centers and 1/4 inch bolt clearance holes. The distribution ground busbar(s) is provided with 1/4-20 studs for installation of the same type of customer provided lugs. Customer must provide additional lug mounting hardware for the distribution ground busbar(s). For stud spacing dimensions, refer to the "VPS Distribution Bus Arrangement" illustrations in this document. Maximum size of wire to be connected to a single position of a VPS modular fuseholder/circuit breaker mounting block is 2 gauge. See Table 8 (Special Application Crimp Lug / Strap Combination) for wiring up to 4/0 gauge.

The fuseholder/circuit breaker mounting block and associated ground busbar are designed to accommodate the lugs listed in Tables 6 and 8. Use Table 9 to select recommended load distribution lead sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of 30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300.

B) When GJ-Type Distribution Circuit Breaker is Provided:

Load conductors and lugs are connected to the distribution circuit breaker mounting block and the respective distribution ground busbar. The distribution circuit breaker mounting block provides a busbar with 3/8-16 captive nuts for installation of customer provided two hole lugs with 1 inch centers and 3/8 inch bolt clearance holes. The distribution ground busbar is provided with 3/8-16 captive nuts for installation of the same type of customer provided lugs. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to the "VPS Distribution Bus Arrangement" illustrations in this document.

The circuit breaker mounting block and associated ground busbar are designed to accommodate the lugs listed in Table 7. Use Table 10 to select recommended load distribution lead sizes and lugs for various loop lengths per fuse ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of 30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300.

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Battery (Input) Lugs

Battery lug requirements are determined by site requirements. Refer to the following for lug specifications.

A) When Battery Disconnect Circuit Breakers (LEL1-Type) or Fuses (TPA-Type) are Ordered (the VPS Distribution Cabinet Assembly must be equipped with a distribution bus that provides battery disconnect positions):

Battery (Load Side) Lugs: Battery (load side) conductors and lugs are connected to the battery disconnect fuseholder/circuit breaker mounting blocks. The fuseholder/circuit breaker mounting blocks provide 1/4-20 studs and mounting hardware for installation of customer provided two hole lugs with 5/8 inch centers and 1/4 inch bolt clearance holes. For stud spacing dimensions, refer to the "VPS Distribution Bus Arrangement" illustrations in this document. Maximum size of wire to be connected to a single position of a VPS modular fuseholder/circuit breaker mounting block is 2 gauge. See Table 8 (Special Application Crimp Lug / Strap Combination) for wiring up to 4/0 gauge.

Battery (Return Side) Lugs: Battery (return side) conductors and lugs are connected to the battery ground busbar. This busbar is provided with 3/8-16 and 1/4-20 captive nuts for installation of customer provided two hole lugs with 1 or 5/8 inch centers and 3/8 or 1/4 inch bolt clearance holes, respectively. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to DIMENSIONS.

The circuit breaker/fuseholder mounting block and battery ground busbar are designed to accommodate the lugs listed in Tables 6 and 8. Use Table 9 to select recommended battery lead sizes and lugs for various loop lengths per required battery disconnect fuse/circuit breaker ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed battery branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of 30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300. Table 10 may be used to select two-hole lugs with 3/8" bolt clearance holes, and 1 inch centers for the battery ground busbar.

B) When Battery Disconnect Circuit Breakers (GJ-Type) are Ordered (the VPS Distribution Cabinet Assembly must be equipped with a distribution bus that provides battery disconnect positions):

Battery (Load Side) Lugs: Battery (load side) conductors and lugs are connected to the battery disconnect circuit breaker mounting block(s). The circuit breaker mounting block(s) provides a busbar with 3/8-16 captive nuts for installation of customer provided two hole lugs with 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to the "VPS Distribution Bus Arrangement" illustrations in this document.

Battery (Return Side) Lugs: Battery (return side) conductors and lugs are connected to the battery ground busbar. This busbar is provided with 3/8-16 and 1/4-20 captive nuts for installation of customer provided two hole lugs with 1 or 5/8 inch centers and 3/8 or 1/4 inch bolt clearance holes, respectively. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to DIMENSIONS.

The battery disconnect circuit breaker mounting block and battery ground busbar are designed to accommodate the lugs listed in Table 7. Use Table 10 to select recommended battery lead sizes and lugs for various loop lengths per required battery disconnect circuit breaker ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed battery branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of

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30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300. Table 9 may be used to select two-hole lugs with 1/4" bolt clearance holes, and 5/8 inch centers for the battery ground busbar.

C) **When Battery Disconnect Fuses (TPL-Type) are Ordered (the VPS Distribution Cabinet Assembly must be equipped with a distribution bus that provides battery disconnect positions):**

Battery (Load Side) Lugs: Battery (load side) conductors and lugs are connected to the battery disconnect fuse mounting block(s). The fuse mounting block(s) provides a busbar with 3/8-16 captive nuts for installation of customer provided two hole lugs with 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to the "VPS Distribution Bus Arrangement" illustrations in this document.

Battery (Return Side) Lugs: Battery (return side) conductors and lugs are connected to the battery ground busbar. This busbar is provided with 3/8-16 and 1/4-20 captive nuts for installation of customer provided two hole lugs with 1 or 5/8 inch centers and 3/8 or 1/4 inch bolt clearance holes, respectively. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to DIMENSIONS.

The battery disconnect fuse mounting block and battery ground busbar are designed to accommodate the lugs listed in Table 7. Use Table 10 to select recommended battery lead sizes and lugs for various loop lengths per required battery disconnect fuse ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed battery branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of 30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300. Table 9 may be used to select two-hole lugs with 1/4" bolt clearance holes, and 5/8 inch centers for the battery ground busbar.

D) **When Battery Disconnect Fuses or Circuit Breakers are NOT Ordered:**

Battery (load and return side) conductors and lugs are connected to the battery busbar and battery ground busbar, respectively. These busbars are provided with 3/8-16 and 1/4-20 captive nuts for installation of customer provided two hole lugs with 1 or 5/8 inch centers and 3/8 or 1/4 inch bolt clearance holes, respectively. Customer must provide lug mounting bolts and additional hardware. For captive nut spacing dimensions, refer to DIMENSIONS.

The battery busbars are designed to accommodate the lugs listed in Tables 6, 7, and 8. Use Table 10 to select recommended battery lead sizes and lugs for various loop lengths per required battery branch circuit ampere rating. Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Wire sizes based on recommendations of the National Electrical Code Table 310-16 for copper wire at 75°C conductor temperature, operating in ambient of 30°C. For operation in ambient higher than 30°C, apply derating factors listed in Table 310-16 of the National Electrical Code. Loop length is the sum of the lengths of the positive and negative leads. For other available lugs and hardware, refer to drawings 031110100 through 031110300. Table 9 may be used to select two-hole lugs with 1/4" bolt clearance holes, and 5/8 inch centers.

Note: *Lists V and W do not provide 1/4-20 captive nuts on the battery busbar, only 3/8-16 captive nuts are furnished.*

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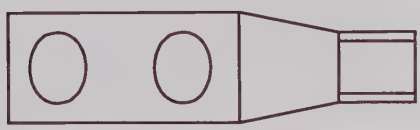
Standard Crimp Lugs



CRIMP LUGS (Two-Hole, 1/4" Bolt Clearance Hole, 5/8" Centers)	
LEAD SIZE (Ga.)	**PART NUMBER**
14-10	245342300
8	245390200
6	245346700
4	245346800
2	245346900

Table 6

CRIMP LUGS (Two-Hole, 3/8" Bolt Clearance Hole, 1" Centers)	
LEAD SIZE (Ga.)	**PART NUMBER**
4	245350000
2	245348200
1/0	245347100
2/0	245347200
3/0	245347300
4/0	245347400
250 MCM	245347500
300 MCM	245347600
350 MCM	245347700
400 MCM	245347800
500 MCM	245347900
600 MCM	245348000
750 MCM	245348100

Table 7

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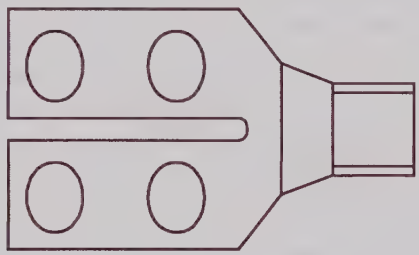
Special Application Crimp Lug / Strap Combination

Straps two VPS modular fuseholder/circuit breaker mounting block wiring positions together, and provides a crimp-type lug which allows distribution wiring up to 4/0 gauge (maximum size of wire to be connected to a single position of a VPS modular fuseholder/circuit breaker mounting block is 2 gauge). Designed to be used with 70 ampere or larger VPS LEL1-type circuit breaker modules which require an empty mounting position, and 125 and 150 ampere circuit breaker modules which require two mounting positions. Specify part number as listed below for desired lead size.

Restrictions

For use with 70 ampere or larger LEL1-type circuit breakers only.



SPECIAL APPLICATION CRIMP LUG / STRAP (Two Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)	
LEAD SIZE (Ga.)	**PART NUMBER**
1/0	245393500
2/0	245393600
3/0	245393700
4/0	245393800

Table 8

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Lug and Wire Size Selection Tables

* Refer to LUGS for applicable information.

LUG AND WIRE SIZE SELECTION FOR 1, 3, 5, or 10 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
30	14 Ga.	B	Marconi: 245342300
49	12 Ga.	B	Marconi: 245342300
78	10 Ga.	B	Marconi: 245342300

Table 9A

LUG AND WIRE SIZE SELECTION FOR 15 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
36	12 Ga.	B	Marconi: 245342300
58	10 Ga.	B	Marconi: 245342300
93	8 Ga.	B	Marconi: 245390200

Table 9B

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LUG AND WIRE SIZE SELECTION FOR 20 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
29	12 Ga.	B	Marconi: 245342300
46	10 Ga.	B	Marconi: 245342300
74	8 Ga.	B	Marconi: 245390200

Table 9C

LUG AND WIRE SIZE SELECTION FOR 25 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
33	10 Ga.	B	Marconi: 245342300
53	8 Ga.	B	Marconi: 245390200
84	6 Ga.	B	Marconi: 245346700

Table 9D

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LUG AND WIRE SIZE SELECTION FOR 30 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
46	8 Ga.	B	Marconi: 245390200
74	6 Ga.	B	Marconi: 245346700
117	4 Ga.	B	Marconi: 245346800

Table 9E

LUG AND WIRE SIZE SELECTION FOR 40 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
37	8 Ga.	B	Marconi: 245390200
59	6 Ga.	B	Marconi: 245346700
94	4 Ga.	B	Marconi: 245346800

Table 9F

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LUG AND WIRE SIZE SELECTION FOR 50 AMPERE DISTRIBUTION FUSE (TPA-Type) OR DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
47	6 Ga.	B	Marconi: 245346700
75	4 Ga.	B	Marconi: 245346800
119	2 Ga.	B	Marconi: 245346900

Table 9G

LUG AND WIRE SIZE SELECTION FOR 60 AMPERE DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) OR BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
37	6 Ga.	B	Marconi: 245346700
58	4 Ga.	B	Marconi: 245346800
93	2 Ga.	B	Marconi: 245346900

Table 9H

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LUG AND WIRE SIZE SELECTION FOR 70 AMPERE DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) OR BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
47	4 Ga.	B	Marconi: 245346800
74	2 Ga.	B	Marconi: 245346900
119	1/0 Ga.	B	Marconi: 245393500 (see Special Application Lugs)

Table 9J

LUG AND WIRE SIZE SELECTION FOR 75 AMPERE DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) OR BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
47	4 Ga.	B	Marconi: 245346800
74	2 Ga.	B	Marconi: 245346900
119	1/0 Ga.	B	Marconi: 245393500 (see Special Application Lugs)

Table 9K

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LUG AND WIRE SIZE SELECTION FOR 100 AMPERE DISTRIBUTION CIRCUIT BREAKER (LEL1-Type) OR BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
59	2 Ga.	B	Marconi: 245346900
95	1/0 Ga.	B	Marconi: 245393500 (see Special Application Lugs)
120	2/0 Ga.	B	Marconi: 245393600 (see Special Application Lugs)

Table 9L

LUG AND WIRE SIZE SELECTION FOR 125 AMPERE BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
68	1/0 Ga.	B	(see Special Application Lugs)
85	2/0 Ga.	B	(see Special Application Lugs)
108	3/0 Ga.	B	(see Special Application Lugs)

Table 9M

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LUG AND WIRE SIZE SELECTION FOR 150 AMPERE BATTERY DISCONNECT CIRCUIT BREAKER (LEL1-Type) (Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
75	2/0 Ga.	B	(see Special Application Lugs)
94	3/0 Ga.	B	(see Special Application Lugs)
119	4/0 Ga.	B	(see Special Application Lugs)

Table 9N

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LUG AND WIRE SIZE SELECTION FOR 70 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
47	4 Ga.	B	Marconi: 245350000
74	2 Ga.	B	Marconi: 245348200
119	1/0 Ga.	B	Marconi: 245347100

Table 10A

LUG AND WIRE SIZE SELECTION FOR 80 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
47	4 Ga.	B	Marconi: 245350000
74	2 Ga.	B	Marconi: 245348200
119	1/0 Ga.	B	Marconi: 245347100

Table 10B

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LUG AND WIRE SIZE SELECTION FOR 100 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
59	2 Ga.	B	Marconi: 245348200
95	1/0 Ga.	B	Marconi: 245347100
120	2/0 Ga.	B	Marconi: 245347200

Table 10C

LUG AND WIRE SIZE SELECTION FOR 125 AMPERE DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type) OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
68	1/0 Ga.	B	Marconi: 245347100
85	2/0 Ga.	B	Marconi: 245347200
108	3/0 Ga.	B	Marconi: 245347300

Table 10D

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LUG AND WIRE SIZE SELECTION FOR 150 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
75	2/0 Ga.	B	Marconi: 245347200
94	3/0 Ga.	B	Marconi: 245347300
119	4/0 Ga.	B	Marconi: 245347400

Table 10E

LUG AND WIRE SIZE SELECTION FOR 175 AMPERE DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type) OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
84	3/0 Ga.	B	Marconi: 245347300
106	4/0 Ga.	B	Marconi: 245347400
125	250 KCMIL	B	Marconi: 245347500

Table 10F

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LUG AND WIRE SIZE SELECTION FOR 200 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
75	3/0 Ga.	B	Marconi: 245347300
95	4/0 Ga.	B	Marconi: 245347400
112	250 KCMIL	B	Marconi: 245347500

Table 10G

LUG AND WIRE SIZE SELECTION FOR 225 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
94	250 KCMIL	B	Marconi: 245347500
112	300 KCMIL	B	Marconi: 245347600
131	350 KCMIL	B	Marconi: 245347700

Table 10H

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LUG AND WIRE SIZE SELECTION FOR 250 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
104	300 KCMIL	B	Marconi: 245347600
121	350 KCMIL	B	Marconi: 245347700
138	400 KCMIL	B	Marconi: 245347800

Table 10J

LUG AND WIRE SIZE SELECTION FOR 300 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
105	350 KCMIL	B	Marconi: 245347700
120	400 KCMIL	B	Marconi: 245347800
150	500 KCMIL	B	Marconi: 245347900

Table 10K

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LUG AND WIRE SIZE SELECTION FOR 400 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
75	(2) 3/0 Ga.	B	Marconi: 245347300 (per cable)
95	(2) 4/0 Ga.	B	Marconi: 245347400 (per cable)
112	(2) 250 KCMIL	B	Marconi: 245347500 (per cable)

Table 10L

LUG AND WIRE SIZE SELECTION FOR 600 AMPERE DISTRIBUTION FUSE (TPL-Type), BATTERY DISCONNECT FUSE (TPL-Type), DISTRIBUTION CIRCUIT BREAKER (GJ-Type), BATTERY DISCONNECT CIRCUIT BREAKER (GJ-Type), OR BATTERY BRANCH CIRCUIT (Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)			
Loop Length (Ft)*	Recm Wire Size*	Recommended Crimp Lug	
		Wire Stranding Class	Part No.
105	(2) 350 KCMIL	B	Marconi: 245347700 (per cable)
120	(2) 400 KCMIL	B	Marconi: 245347800 (per cable)
150	(2) 500 KCMIL	B	Marconi: 245347900 (per cable)

Table 10M

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Relay Rack Options

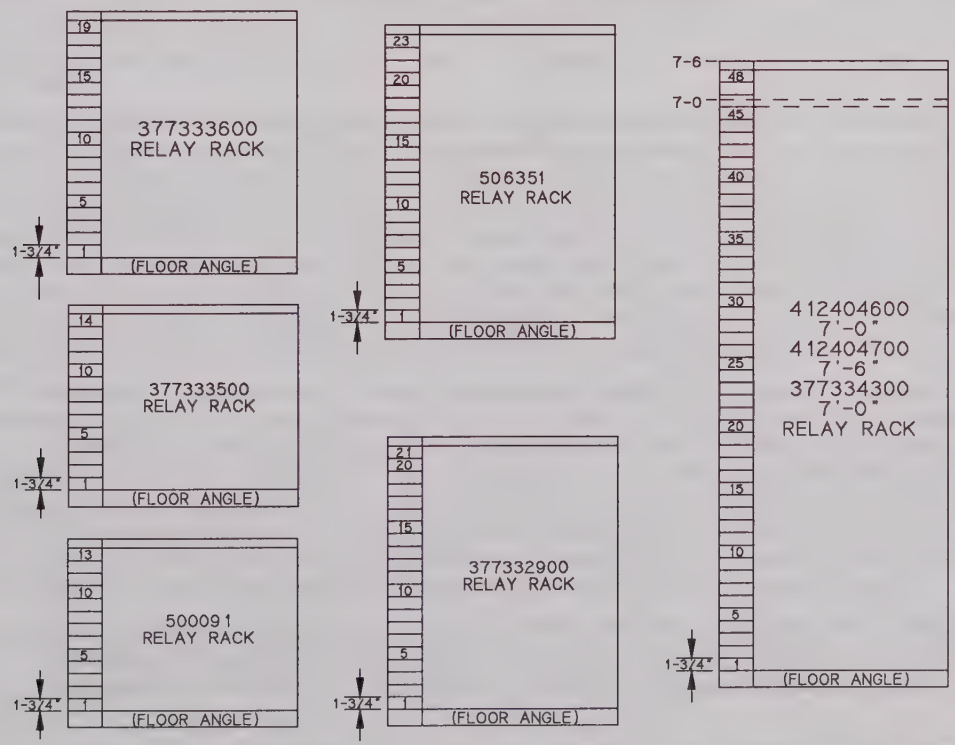
The VPS Distribution Cabinet Assembly is factory mounted to the relay rack specified when ordered. This cabinet assembly cannot be mounted to a relay rack in the field. The following relay racks are available:

PART NUMBER	SIZE	AVAILABLE MOUNTING POSITIONS 1U = 1-3/4"	NOTES
500091	25-1/8"H x 23"W	13U	--
377333500	27-1/2"H x 23"W	14U	(Note 2)
377333600	35-7/16"H x 23"W	19U	(Note 2)
377332900	39-1/8"H x 23"W	21U	(Note 2)
506351	42-5/8"H x 23"W	23U	(Note 2)
377334300	7'0"H x 23"W	45U	Seismic (complies with Bellcore Seismic Zone 4 requirements)
412404600	7'0"H x 23"W	45U	--
412404700	7'6"H x 23"W	48U	--

Table 11

Note 1: *For additional relay rack options, see drawing 412202500.*

Note 2: *The dc output cabling may be restricted by the top angle of the relay rack.*



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Replacement Ordering Notes

1) **Optional External Alarm Interconnect Cable (Lists 40 and 41 only):** Supplied with the Alarm Termination circuit card (List 40 or 41). Provides mating connectors and cable as a convenient method of connecting the external alarm wiring of the VPS Intelligence Shelf to the Alarm Termination circuit card. The Alarm Termination circuit card provides screw-clamp type terminals for customer connections. Connects between J8 on the VPS Intelligence Shelf and J8 on the Alarm Termination circuit card (423356900) located within the main VPS Distribution Cabinet Assembly. For a replacement cable, order Part No. 421868700 (2'4" cable).

2) **Standard External Alarm Interconnect Cable (cannot be used with Lists 40 and 41):** Provides mating connectors and fifteen (15) foot long cable as a convenient method of connecting the external alarm wiring of the VPS Intelligence Shelf to customer circuits. Connects to J8 on the VPS Intelligence Shelf and provides 28 gauge leads to be spliced to customer leads. For a replacement cable, order Part No. 421629500 (15'0" cable). Other cable options include Part Nos. 421631600 (30'0" cable) and 421630900 (60'0" cable).

3) **VPS Distribution Cabinet Assembly to VPS Distribution Cabinet Assembly Interconnect Cable:** Provides mating connectors and cable as a convenient method of connecting the alarm, reference, and control leads of a VPS Distribution Cabinet Assembly to a subsequent VPS Distribution Cabinet Assembly. Connects between J1 on "Connector Assembly" circuit card 500441 located within the VPS Distribution Cabinet Assembly and J2 on "Connector Assembly" circuit card 500441 located within the subsequent VPS Distribution Cabinet Assembly. For a replacement cable, order Part No. 100916 (25'0" cable).

4) **"Connector Assembly" Circuit Card to VPS Intelligence Shelf (MCA) Interconnect Cable:** Provides mating connectors and cable as a convenient method of connecting the alarm, reference, and control terminals provided on the "Connector Assembly" circuit card for customer connections and system interface to the MCA in the VPS Intelligence Shelf. Connects between J2 on "Connector Assembly" circuit card 500441 located in the main VPS Distribution Cabinet Assembly and J9 on the VPS Intelligence Shelf located within the same rack. For a replacement cable, order Part No. 421868200 (13.5" cable).

5) **"Connector Assembly" Circuit Card to VPS Intelligence Shelf (MCA/PCU's) Interconnect Cable:** Provides mating connectors and cable as a convenient method for MCA signal interconnection between the terminals provided on the "Connector Assembly" circuit card for customer connections and interface to PCU's located in other racks. Connects between J8, J9, or J10 on "Connector Assembly" circuit card 500441 located in the main VPS Distribution Cabinet Assembly and J11 or J12 on the VPS Intelligence Shelf located within the same rack. For a replacement cable, order Part No. 100573 (11.5" cable) for V200ICAB (Spec. No. 588700701), V260ICAB (Spec. No. 588703600), V400ICAB (Spec. No. 588701101), and V520ICAB (Spec. No. 588703800) VPS Intelligence Shelves. For a replacement cable, order Part No. 100572 (11.5" cable) for V100ICAB (Spec. No. 588701300) VPS Intelligence Shelf.

6) **VPS Intelligence and Expansion Shelves Interconnect Cable (when located in same rack):** Provides mating connectors and cable as a convenient method for MCA signal interconnection between a VPS Intelligence Shelf and a VPS Expansion Shelf or between two VPS Expansion Shelves, located in the same rack. Connects between J11 and J12 of each shelf. A cable is provided with each VPS Expansion Shelf. For a replacement cable, order Part No. 100573 (11.5" cable) for V200ECAB (Spec. No. 588700801), V260ECAB (Spec. No. 588703700), V400ECAB (Spec. No. 588701201), and V520ECAB (Spec. No. 588703900) VPS Expansion Shelves. For a replacement cable, order Part No. 421842500 (11.5" cable) for V100ECAB (Spec. No. 588701400) VPS Expansion Shelf.

Note: *When adding an additional V200ECAB or V400ECAB VPS Expansion Shelf (Spec. No. 588700801 or 588701201) in the field to an existing older style V200ICAB or V400ICAB VPS Intelligence Shelf (Spec. No. 588700700 or 588701100), use cable Part No. 100572.*

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Cables continued

7) **VPS Intelligence and Expansion Shelves Interconnect Cable (when located in separate racks):** Provides mating connectors and cable as a convenient method for MCA signal interconnection between VPS PCU Shelves located in separate racks. VPS PCU Shelves in the same rack are interconnected as described in 6). The VPS Intelligence Shelf is interconnected to the "Connector Assembly" circuit card as described in 5).

   Up to two additional racks of PCU Shelves are interconnected via "Connector Assembly" circuit card 500441 located in the main VPS Distribution Cabinet Assembly. Each interconnect cable connects between J8, J9, or J10 on "Connector Assembly" circuit card 500441 located in the main VPS Distribution Cabinet Assembly and J11 or J12 of the top most VPS PCU Shelf located in a separate rack.

   For a replacement cable, order Part No. 100575 (25'0" cable) for VPS PCU Shelves V200ICAB (Spec. No. 588700701), V200ECAB (Spec. No. 588700801), V260ICAB (Spec. No. 588703600), V260ECAB (Spec. No. 588703700), V400ICAB (Spec. No. 588701101), V400ECAB (Spec. No. 588701201), V520ICAB (Spec. No. 588703800), and V520ECAB (Spec. No. 588703900). A 12'0" cable is also available, Part No. 100574.

8) **MCA to Vortex® SMART Interface Cable:** Provides mating connectors and cable as a convenient method of connecting the MCA in the VPS Intelligence Shelf to a Vortex SMART. Connects between the RS-485 jack on the VPS Intelligence Shelf and the VPS Port jack on the Vortex SMART Shelf. For a replacement cable, order Part No. 500819.

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LIST OF PARTS

(This Stocklist may not list every component contained in each List.)

LIST NUMBER	QTY.	PART NUMBER	DESCRIPTION
	1	346517400	Cover, Bottom Rear
	1	364581300	Cover, Top Front
	1	364581400	Cover, Top Rear
	1	364814200	Cover, Bottom Front
	1	414108100	1 Row Door Assy
1	1	421629500	Cable, Overmld 37 Pos 25'L
	1	423305700	Shunt A/D Bypass Pw Assy
	1	424516000	1 Row Base Shunt Assy
	1	486384800	1 Row Distr LDV Assy
	1	501595	Jumper, Sense Leads
	1	504201	1 Row Shunt Mon Assy
	1	346517400	Cover, Bottom Rear
	1	364581300	Cover, Top Front
	1	364581400	Cover, Top Rear
	1	364814200	Cover, Bottom Front
	1	414108200	2 Row Door Assy
2	1	421629500	Cable, Overmld 37 Pos 25'L
	1	423305700	Shunt A/D Bypass Pw Assy
	1	424516100	2 Row Base Shunt Assy
	1	486384900	2 Row Distr LDV Assy
	1	501595	Jumper, Sense Leads
	1	504202	2 Row Shunt Mon Assy
	1	346517400	Cover, Bottom Rear
	1	364581300	Cover, Top Front
	1	364581400	Cover, Top Rear
	1	364814200	Cover, Bottom Front
	1	414108300	3 Row Door Assy
3	1	421629500	Cable, Overmld 37 Pos 25'L
	1	423305700	Shunt A/D Bypass Pw Assy
	1	424516200	3 Row Base Shunt Assy
	1	486385000	3 Row Distr LDV Assy
	1	501595	Jumper, Sense Leads
	1	504203	3 Row Shunt Mon Assy
	1	346517400	Cover, Bottom Rear
	1	364581300	Cover, Top Front
	1	364581400	Cover, Top Rear
	1	364814200	Cover, Bottom Front
	1	414108400	4 Row Door Assy
4	1	421629500	Cable, Overmld 37 Pos 25'L
	1	423305700	Shunt A/D Bypass Pw Assy
	1	424516300	4 Row Base Shunt Assy
	1	486385100	4 Row Distr LDV Assy
	1	501595	Jumper, Sense Leads
	1	501943	4 Row Shunt Mon Assy

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LIST NUMBER	QTY.	PART NUMBER	DESCRIPTION
5	1	100572	Cable Assy
	1	101207	Plate, L-Shape, 48v Designation, Lexan
	2	500233	Bus Bar, Termination
	1	500321	Shield, Bat Term
	1	500342	Jumpers, Rectifier Output
	1	421868200	Cable Assy
6	1	500452	Jumpers, 3rd/ 4th Exp Shelf Rect Output
	1	500451	Jumpers, 1st/ 2nd Exp Shelf Rect Output
7	2	347177700	Bus Bar, 400A Rect Copper
	2	357161200	Bus Bar, 400A Rect Copper
	1	421868200	Cable Assy
	1	101207	Plate, L-Shape, 48V Designation, Lexan
	1	100573	Cable Assy
8	2	347177800	Bus Bar, Rect Copper
9	2	347177700	Bus Bar, Rect Copper
	2	357161200	Bus Bar, Rect Copper
	1	421868200	Cable Assy
	1	101192	Plate, L-Shape, 24V Designation, Lexan
	1	100573	Cable Assy
10	2	347177800	Bus Bar, Rect Copper
12	2	347177800	Bus Bar, Rect Copper
	1	100572	Cable Assy, 9 To 15 Pos 11 1/ 2"L
13	2	347177800	Bus Bar, Rect Copper
	1	100572	Cable Assy, 9 To 15 Pos 11 1/ 2"L
14	2	347177700	Bus Bar, Rect Copper
	2	357161200	Bus Bar, Rect Copper
	1	421868200	Cable Assy
	1	101207	Plate, L-Shape, 48v Designation, Lexan
	1	100573	Cable Assy
15	2	347177800	Bus Bar, Rect Copper
16	2	347177700	Bus Bar, Rect Copper
	2	357161200	Bus Bar, Rect Copper
	1	421868200	Cable Assy
	1	101192	Plate, L-Shape, 24V Designation, Lexan
	1	100573	Cable Assy
17	2	347177800	Bus Bar, Rect Copper
18	1	486531800	Vortex® Power Conversion Unit, 48V/65A
19	1	486531900	Vortex® Power Conversion Unit, 24V/130A
20	1	486530300	Vortex® Power Conversion Unit, 48V/25A
21	1	486529901	Vortex® Power Conversion Unit, 48V/50A

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LIST NUMBER	QTY.	PART NUMBER	DESCRIPTION
24	4	43380199	Class B Filter, 433800199
25	1	486529601	Vortex® Pwr Conv Unit 25V/100A
26	4	433800199	Class B Filter
27	4	486390500	HI AC Disconn
28	1 1 1 2	421296200 421631100 588241300 256694301	Jumpers, Converter Shelf Jumpers, Converter Alarm DC-DC Conv Shelf, +24V to –48V, 30A Circuit Breaker, 50A
29	1 1 2	421298300 588241300 256694301	Jumpers, Converter DC-DC Conv Shelf, +24V to –48V, 30A Circuit Breaker, 50A
30	1	486808500	48V DC-DC Conv Module
31	1 1 1 1	588240600 421296200 421631100 256694301	DC-DC Conv Shelf, +24V to –48V, 15A Jumpers, Converter Shelf Jumpers, Converter Alarm Circuit Breaker, 50A
32	1 1 1 1	104821 104836 104837 104838	AC Input Line Cord, 14 ft. AC Input Line Cord, 14 ft. AC Input Line Cord, 14 ft. AC Input Line Cord, 14 ft.
40	1 1 1 1	288810600 421200114 421868700 423356900	Signal, Audible Jumpers, Audible Alarm Overmolded Cable Assy Connector Pw Assy
41	1 1	421868700 423356900	Overmolded Cable Assy Connector Pw Assy
70	1 2 2 1 1 1 1	500819 500834 500835 500842 500868 483215400 58650410002	Cable Busbar, 400A Rectifier Output Busbar, 400A Rectifier Output Jumper, Power Cover, Output MCA RS-485 Interface Vortex SMART
72	1	483215200	Kit, MCA Modem Install
73	1	041182000	Vortex® WinLink Sftwr Pkg
90	1	100731	Battery Tray

Note: *For Distribution List options, see individual page that applies to the option for distribution assembly part numbers.*

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SPECIFICATIONS

The following apply to the 582120000 system. Refer to the PCU Shelf Power Data Sheet (PD) for specifications specific to the PCU shelf.

External Monitoring, Reference, and Control Signals

Leads from the VPS Intelligence Shelf are brought into the VPS Distribution Cabinet Assembly to a "Connector Assembly" circuit card. This circuit card provides screw-clamp type terminals for connection of customer wiring, as described below.

Remote Test/Equalize: All PCU's can be placed into the test/equalize mode by applying an external ground signal. The PCU's operate in the float mode when the signal is absent.

External "System Voltage" Meter Reading: Leads can be extended from the VPS to an external voltage source. This is the voltage source the MCA monitors for system alarms and displays as "System Output Voltage".

External Voltage Sensing: Leads can be extended from the VPS to the point at which output voltage is to regulate, such as the battery or a battery charge temperature compensation module.

Emergency Shutdown and **Fire Alarm Disconnect:** The PCU's can be inhibited by applying an external ground signal. Manual restart is required. If low voltage disconnect is furnished, the battery and system output can be wired to also disconnect from the controlled load(s). If List V or W is furnished, battery also disconnects from the system.

System Fuse Alarm Input: The system fuse alarm circuit activates when a ±18 to 60 volts DC signal is applied this terminal.

Environmental Ratings

Operating Ambient Temperature Range: -40°C to +40°C (-40°F to +104°F).

Storage Ambient Temperature Range: -40°C to +85°C (-40°F to +185°F).

Humidity: This cabinet assembly is capable of operating in an ambient relative humidity range of 0% to 95%, noncondensing.

Altitude: The maximum operating ambient temperature should be derated by 10°C at an elevation of 10,000 feet above sea level. For elevations between 3,000 feet and 10,000 feet, derate the maximum operating ambient temperature linearly.

Mounting: Recommended minimum aisle space clearance is 2'6" for the front of the relay rack and 2' for the rear of the relay rack.

Compliance Information

Seismic Compliance: This system is NEBS Zone 4 Earthquake compliant when mounted in relay rack Part No. 377334300. See Table 11 (RELAY RACKS).

Safety Compliance: This power board is UL Listed as a DC Power Distribution Center for Communications Equipment.

European Compliance (CE): This product conforms to the EU Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC and harmonized standards EN55022 Class A and EN50082-1.

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NEBS Compliance:

LIST	NEBS COMPLIANCE			LIST	NEBS COMPLIANCE		
	LEVEL 1	LEVEL 2	LEVEL 3		LEVEL 1	LEVEL 2	LEVEL 3
1	X	X		41	X	X	
2	X	X		70			
3	X	X		72			
4	X	X		73			
5	X	X		90			
6	X	X		A	X	X	
7	X	X		B	X	X	
8	X	X		C	X	X	
9	X	X		D	X	X	
10	X	X		E	X	X	
12	X	X		F	X	X	
13	X	X		G	X	X	
14				H	X	X	
15				J	X	X	
16				K	X	X	
17				L	X	X	
18				M	X	X	
19				N	X	X	
20	X	X		P	X	X	
21	X	X		R	X	X	
25	X	X		S	X	X	
24	X	X		T	X	X	
26	X	X		V	X	X	
27	X	X		W	X	X	
28				AA	X	X	
29				BB	X	X	
30				CC	X	X	
31				DD	X	X	
32				JJ	X	X	
40	X	X					

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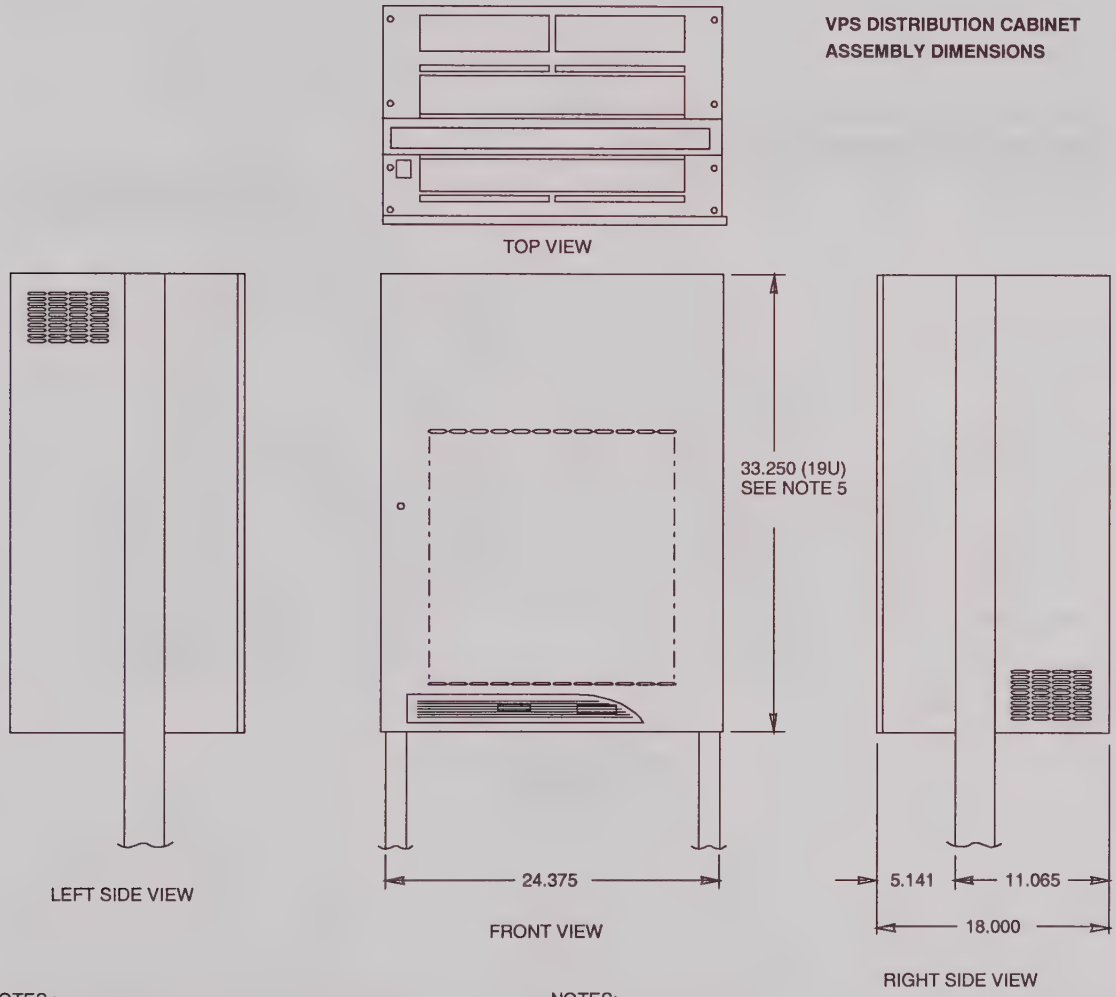
PHYSICAL SIZE INFORMATION

Overall Dimensions



NOTES :
1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

2. WEIGHT IN LBS. (minus relay rack)

   FOUR BUS CABINET ASSEMBLY
   NET : not available at time of publication
   SHIPPING : not available at time of publication

   THREE BUS CABINET ASSEMBLY
   NET : not available at time of publication
   SHIPPING : not available at time of publication

   TWO BUS CABINET ASSEMBLY
   NET : not available at time of publication
   SHIPPING : not available at time of publication

   ONE BUS CABINET ASSEMBLY
   NET : not available at time of publication
   SHIPPING : not available at time of publication

NOTES:
3. FINISH: OFF-WHITE

4. INDICATES VENTILATING GRILLE

5. DIMENSION FOR CABINET ASSEMBLY THAT CONTAINS FOUR DISTRIBUTION BUSES.

   FOR THREE BUS CABINET ASSEMBLY, THIS DIMENSION IS 26.250 (15U).

   FOR TWO BUS CABINET ASSEMBLY, THIS DIMENSION IS 19.250 (11U).

   FOR ONE BUS CABINET ASSEMBLY, THIS DIMENSION IS 12.250 (7U).

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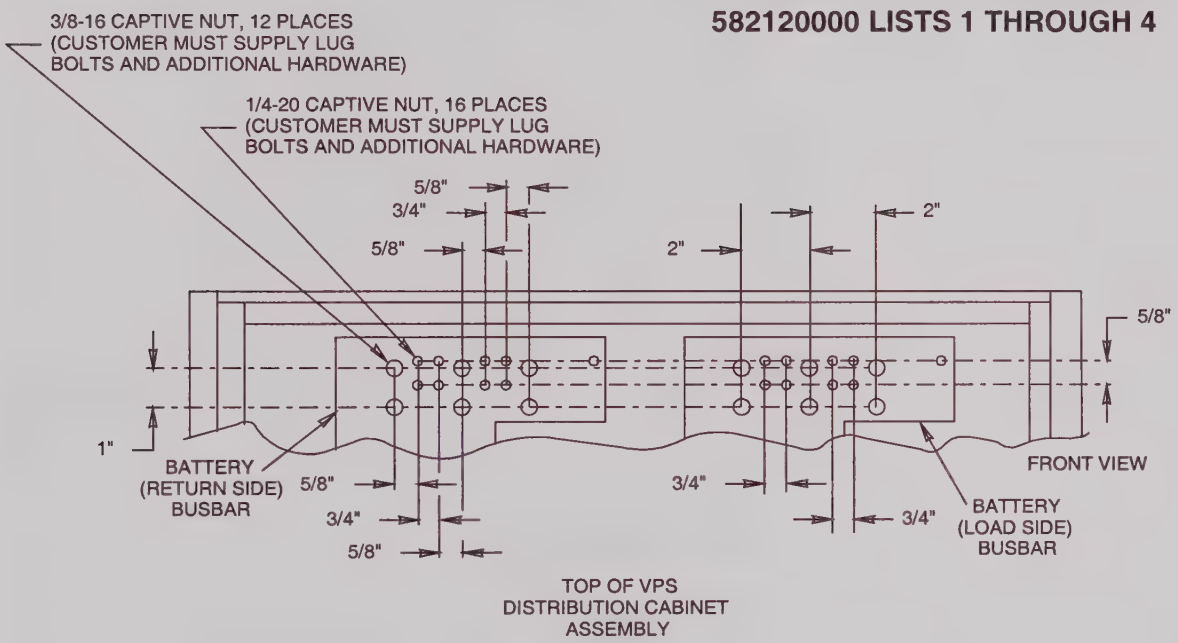
VPS DISTRIBUTION CABINET ASSEMBLY BATTERY BUSBAR DIMENSIONS 582120000 LISTS 1 THROUGH 4



FOR LOAD AND BATTERY LUG HOLE SIZE AND SPACING DIMENSIONS, REFER TO THE ILLUSTRATIONS LOCATED UNDER THE BUS MODULE LIST DESCRIPTIONS IN THIS DOCUMENT

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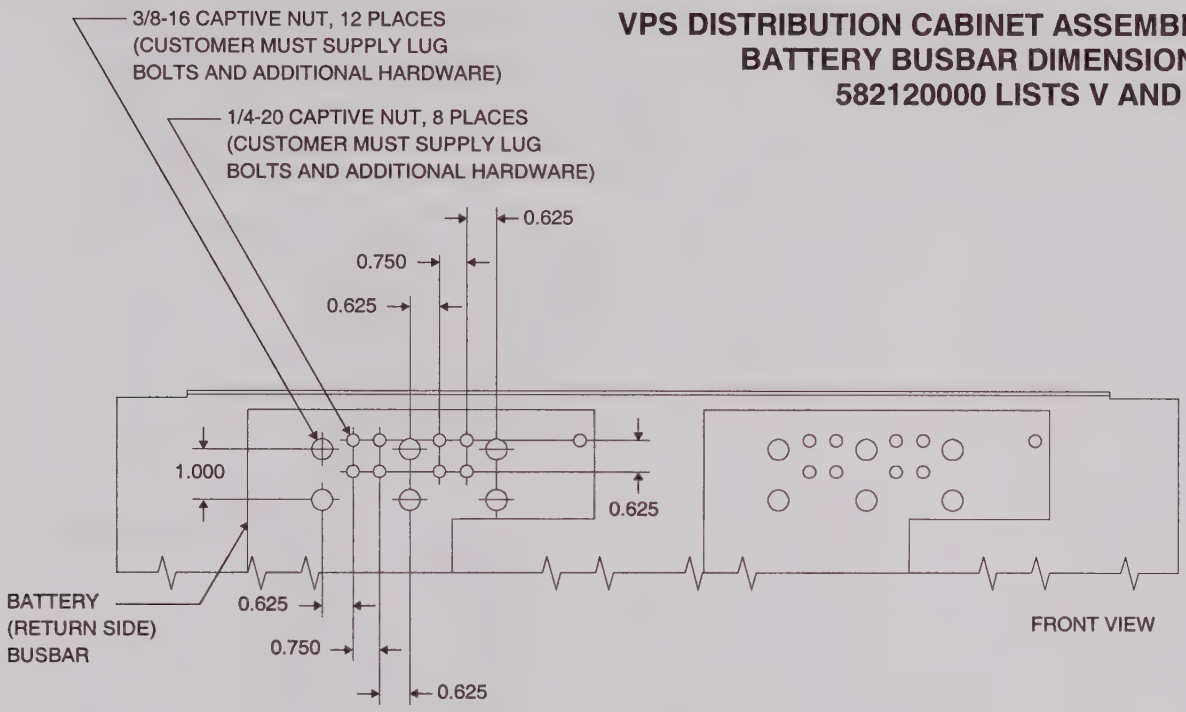
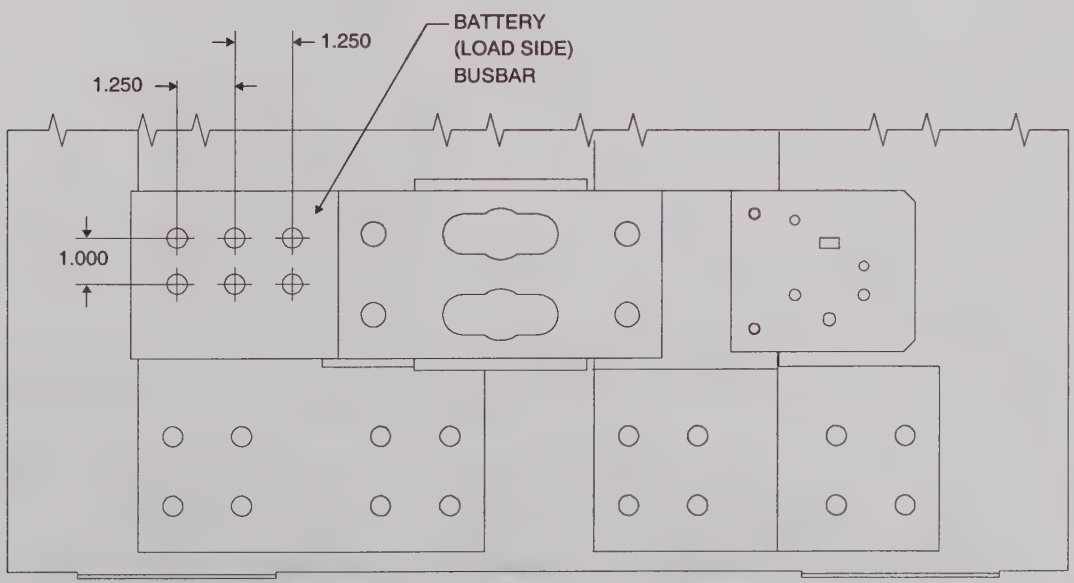
VPS DISTRIBUTION CABINET ASSEMBLY BATTERY BUSBAR DIMENSIONS 582120000 LISTS V AND W



UPPER SECTION OF VPS
DISTRIBUTION CABINET ASSEMBLY



LOWER SECTION OF VPS
DISTRIBUTION CABINET ASSEMBLY

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RELATED DOCUMENTATION

VPS Intelligence and Expansion Shelf Power Data Sheets (includes PCU and MCA info):

PD588700701/PD588700801 (V200ICAB/V200ECAB)
PD588701101/PD588701201 (V400ICAB/V400ECAB)
PD588701300/PD588701400 (V100ICAB/V100ECAB)
PD588703600/PD588703700 (V260ICAB/V260ECAB)
PD588703800/PD588703900 (V520ICAB/V520ECAB)

Schematic Diagram: SD582120000 (VPS)
SD588700701 (V200ICAB)
SD588700801 (V200ECAB)
SD588701101 (V400ICAB)
SD588701201 (V400ECAB)
SD588701300 (V100ICAB)
SD588701400 (V100ECAB)
SD588703600 (V260ICAB)
SD588703700 (V260ECAB)
SD588703800 (V520ICAB)
SD588703900 (V520ECAB)

Wiring Diagram: T588700701 (V200ICAB)
T588700801 (V200ECAB)
T588701101 (V400ICAB)
T588701201 (V400ECAB)
T588701300 (V100ICAB)
T588701400 (V100ECAB)
T588703600 (V260ICAB)
T588703700 (V260ECAB)
T588703800 (V520ICAB)
T588703900 (V520ECAB)
031194100 (distribution)
T424516000 (distribution)
T424516100 (distribution)
T424516200 (distribution)
T424516300 (distribution)
T486384800 (distribution)
T486384900 (distribution)
T486385000 (distribution)
T486385100 (distribution)
T486780700 (distribution)
T486780800 (distribution)
T486780900 (distribution)
T486781000 (distribution)

Color MCA Menu Tree: Section 5762 (except V100ICAB)
Section 5693 (V100ICAB)

Instructions: Section 5595 (VPS, Spec. No. 582120000, -48 VDC)
Section 5598 (VPS, Spec. No. 582120000, +24 VDC)
Section 5728 (Vortex® WinLink User Manual, Spec. No. 041182000)

Load and Battery Lug Detail Drawings: 031110100 through 031110300

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APPENDIX (a record of changes made to this document)

Issue	Change Number (ECO)	Description of Change	Date	Approved
AA	LLP015179	New June 7,2000 BP M	5/31/00	Steve McWilliams
AB	LLP015879	1A, 125A, and 150A LEL1-type circuit breakers added. 600A GJ-type "electrical trip" circuit breaker added. Mounting restriction changed for bus modules K through S. August 4,2000 BP M	7/27/00	Scott Lewis

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MP MASTER
MA30944